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WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

More Options, Competition Improve Trimmer Market

Red Fire Ants Are Spreading in the Direction of California

New Plant Tips Column by Author Michael Dirr

Turf and Landscape

INSECT CONTROL GUIDE

Entomologist David Nielson checks pheromone trap at Secrest Arboretum, Wooster, Ohio

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3915

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MAY 1984 VOLUME 23, NUMBER 5

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

22 Trimmer Makers See Trend To Durability, Flexibility

Trimmer manufacturers focus on more durable gasoline-powered trimmers as homeowners trade up to professional-strength models. Options now include small cultivators and snowblowers. Professionals benefit from homeowner selection.

DEPARTMENTS

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27 1984 Edition of the INSECT CONTROL GUIDE

Two new insecticides should receive turf labels this spring while research on turf resistance to insects has already resulted in one new perennial ryegrass. A report on the spread of the imported red fire ant in the South and other recent developments are included.

64 Earl Crane, Still Selling Turf Equipment at 78

Earl Crane sold his first mower during the 30's, bought and ran a golf course in the 40's, and now sells more than seven lines of turf equipment from his home in Tiffin, Ohio. Crane has witnessed the development of the turf aerifier since its creation and keeps tinkering to refine it.

66 New Column Clears Up Special Plant Needs

Dr. Michael Dirr, plant identification specialist and book author, provides tips to often-confused plant problems.

Robert L. Edgell, Chairman; Richard Moeller, President; Lars Fladmark, Executive Vice President; Arland Hirman, Treasurer; Thomas Greney, Senior Vice President; Ezra Pincus, Senior Vice President; Pat O'Rourke, Group Vice President; Joe Bilderbach, Vice President; James Gherna, Vice President; George Glenn, Vice President; Harry Ramaley, Vice President.

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INTERNATIONAL HARVESTER

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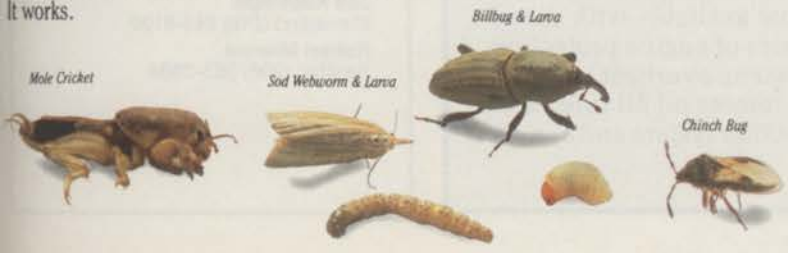

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Circle No. 136 on Reader Inquiry Card

by **Bruce F. Shank**, executive editor

How tough is your course?

Superintendents may be able to compare the difficulty of their course to others if USGA's 'Slope' system works out in trial states.

Albert Mulberry, executive director of the Northern Ohio Golf Association told 200 superintendents during a regional USGA Conference, "The purpose of the slope system is to provide visiting golfers with a method of equalizing their handicaps with home course golfers."

A team of four officials must rate the course using a complicated procedure intended to gauge the difficulty of a course by the difference in scores between scratch golfers and bogey golfers. The average course would have a slope of 113. Scores below 113 are easier than average and scores higher indicate difficulty.

James Farrell, USGA manager of the Mid-continent region, said, "If the system works out, we may be in a position to take the program national by 1986."

New mowers drop pounds

Mower manufacturers were given an opportunity to discuss new product changes during the Canadian Turfgrass Conference in Toronto in March. Overall, the changes represented a shift toward lighter fairway mowers, away from wheel-driven gangs, and longer-life engines.

David Leg of Ransomes stressed light-weight mowing and hydraulics with Ransomes products. Leg said light-weight fairway mowers are gaining in use as fairways are contoured and reduced in size. "Some 18-hole courses now devote only 20 acres to fairways," Leg pointed out. At 2.5 acres per hour, a triplex can cut all fairways in one day.

Henry Larsen from Jacobsen announced changes in the five-gang, 11-ft. cut HF-5, making it lighter, adding a 33-hp Volkswagen diesel engine, and offering baskets for clippings. Jacobsen also offers 18-to 22-hp Kubota diesel engines on its Turf Cat riding rotary. Two new products mentioned by Larsen were walk-behind rotaries and the Motomop, a motorized roller squeegee capable of removing 3,000 gallons/hour of water from greens, tennis courts or other areas.

Toro's Roy Eldridge had the most to say with 14 new products for 1984, including seven 21-inch trim mowers, three with a new two-cycle engine made by Suzuki. Toro introduced two large walk-behind rotaries this year with a sulky to be available soon.

Gordon Mitchell of Canada's Brouwer Turf Equipment Ltd. showed a three-gang mower for low-budget golf courses. Powered either by tractor PTO or a Honda engine, the pull-behind gang is also available with verticutter reels. Tractors with as little as 17-hp at the PTO can operate the gangs. Mitchell also showed Brouwer's 76-inch triplex mower which is belt-driven and powered by a Robin engine.

Cushman/Ryan's Dan Hedglin described improvements to the Front-Line 72-in. riding rotary. Now available with diesel engine, the Front Line now offers a series of engine protection devices, including an air-induction system, overheat warning system, a systems check button, and a remote oil fill tube. The Front Line options include a grass collection system and a snow blower.

WT&T

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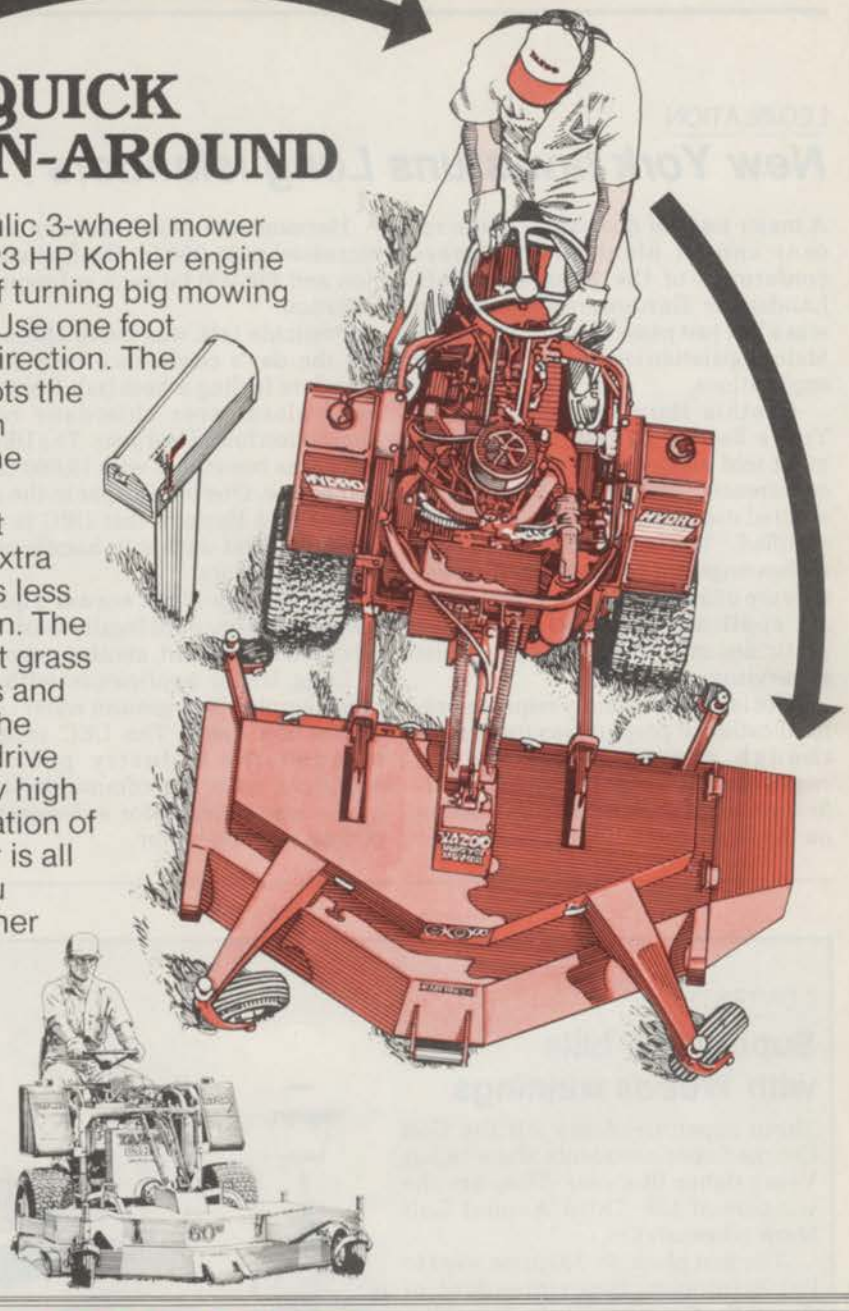

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LEGISLATION

New York law stuns Long Islanders

A major topic of discussion at the recent annual plant and turfgrass conference of the Nassau/Suffolk Landscape Gardeners Association was a law just passed by the New York State Legislation concerning pesticide applications.

Cynthia Harmon, chief of New York's Bureau of Pesticide Management told almost 2,000 attending the conference, "More applicators (of restricted use pesticides) will have to be certified." The law is still open to public hearings and comment so final details are unknown. The new law states all applicators of restricted use pesticides must be certified, not just supervisors.

The law immediately requires prenotification of property occupants, although adjacent land owner requirements are not finalized. Notification must include all information on the label, including warnings.

Harmon said penalties have been increased to $5,000 for the first violation and $10,000 for each subsequent violation.

Pesticide talk was heard throughout the day's conference from Long Islanders feeling a backlash from the local alarm over chlordane contamination found last year. The DEC's office was inundated with 15,000 calls at the time. One landscaper in the audience told Harmon that DEC is understaffed and unable to handle calls from applicators.

The DEC could not answer a question where one could legally wash application equipment, another concern of Long Island applicators with so much emphasis on ground water contamination there. The DEC recommended the industry pool its resources with the community and hire a waste hauler for a designated pickup of waste water.

Dr. Henry Indyk *tells Long Islanders at the recent plant and turfgrass conference not to overlook simple turf management practices such as liming, proper verticutting, and introduction of fine-textured ryegrasses.*

CONTESTS

Supers pay bills with *Weeds* winnings

Three superintendents left the Golf Course Superintendents Show in Las Vegas richer this year. They are the winners of the Third Annual Golf Show Sweepstakes.

The first place, $1,000 prize went to Pat Brinkman, superintendent of Amarillo Country Club, Amarillo, TX. "When I filled out the entry card at the Bunton booth, I never dreamed I would win. It came as a complete surprise!"

Tim Fuller, of DuBois Country Club, DuBois, PA, left Las Vegas $500 richer after filling out his entry at the Aquatrols booth.

Least, but not last, was William Ward, superintendent of Morris Park Country Club, South Bend, IN, who took home $250. Bill, who entered at the Otterbine booth, called the prize and the show exciting. "It was quite a surprise and very appreciated to be a winner in the Sweepstakes held in Las Vegas. My thanks for promoting this event and adding to the excitement of the Conference."

First place winner Pat Brinkman *took $1,000 home from the GCSAA Show after entering the Sweepstakes at the Bunton booth.*

"The pleasure is ours," responds Publisher Dick Gore. "Three years ago we decided to support the GCSAA Show with a Show Daily and a sweepstakes for the superintendent. This year was our first year as the recognized publication of the GCSAA Show. The golf superintendent seems to know an opportunity when he sees one. So far, thousands of superintendents have filled out entry forms, and nine have won. Everyone wins in our opinion."

TURF MANAGEMENT

Beard says future depends on efficiency

Dr. James Beard left his warm lab at Texas A&M in March and travelled through a blizzard to speak at the Canadian Turfgrass Conference in Toronto. His message to the predominantly golf course superintendents group was start getting prepared for changes in turf management.

Higher prices for petroleum products and equipment will force a much closer look at their use in the future, Beard said. Staff and equipment movement will need to be better scheduled for cost efficiency. Growth regulator use will increase as new products enter the market. Integrated pest management and biological controls will work their way into maintenance programming.

"What up to now has been an art will also become a science," Beard claimed. The amount of knowledge necessary to consider all aspects of efficient turf management will increase greatly.

A second prime consideration for the future is water use according to Beard. Smaller, lower-pressure irrigation heads will be used to cut down on pumping costs. Records will have to

DRIVE A DIESEL OVER YOUR LAWN.

It looks like a riding mower. It cuts like a riding mower. But this Kubota is something else.

We call it a Kubota G. You might just call it great. Because it's the first lawn and garden tractor of such remarkably small size to have a diesel engine.

A Kubota G tractor comes with a powerful 2- or 3-cylinder water-cooled diesel engine. The engines are built to the same exacting standards as our bigger tractors. And the advantages of a diesel engine vs. gas are many.

Diesel is thriftier on fuel.

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Most important, a Kubota diesel will last longer. A good deal longer than any gas mower.

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You can also attach a front blade or snow blower. While an optional rear power take-off lets you operate a tiller.

There are four Kubota G lawn and garden tractors, from 10 to 14 horsepower. Two models come with an easy-to-drive hydrostatic transmission.

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UPDATE

Rossi tapped by golf car group

Don A. Rossi, executive director emeritus of the National Golf Foundation, was named executive director of the National Golf Car Manufacturers Association, Inc.

The formation of the new association was announced at the recent PGA Merchandise Show. George H. Inman, president and chairman of the board of Club Car was named president, and Fred Sommers was appointed general council.

NGF's first school a success

Attendees from 22 states and Canada were at the first Golf Management School sponsored by the National Golf Foundation and Oglebay, a destination resort in a 1,400-acre municipal park in Wheeling, WV. All registrants were, in some way, involved in the management of public golf facilities. The first year of the two year program drew 78 registrants. The second year of the program is scheduled to begin the week of Jan. 13, 1985.

Subject matter ranged from the philosophy of public golf to promotion, merchandising and accounting procedures.

Hurdzan to stress nature of golf

Dr. Michael J. Hurdzan, the new president of the American Society of Golf Course Architects, wants the nature and art of golf course architecture to be recognized and to encourage more children to play.

Hurdzan is a partner in the golf course architectural firm of Kidwell and Hurdzan, Inc., Columbus, OH. The firm has designed more than 80 new courses, mainly in the Midwest.

"During my term I have three main goals I'd like to implement," Hurdzan told WT&T. "They include establishing golf course architecture as an artform. Secondly, I'd like to establish a close alliance with national wildlife associations, especially the Audubon Society, to attract useful wildlife to golf courses, such as bluebirds, which help in insect and weed control. Thirdly, we'd like to keep trying to encourage growth of the game of golf and encourage the development of courses for children. Right now, the average age for learning to play golf in the U.S.is 25. If children were encouraged and had a convenient, inexpensive place to learn the game, that figure could be dropped measurably. The Society would like to work with allied golf associations to make this happen."

The Society currently has 88 members,which represents 75 percent of the active golf course architects in the country and Canada.

Other officers elected are John Watson, Lachute, Quebec, Canada, vice president; Kenneth K. Killian, Palatine, IL, secretary; and Roger G. Rulewich, Montclair, NJ, treasurer.

Dr. Richard Skogley *addresses delegates of the Canadian Turfgrass Conference on the pros and cons of sand topdressing.*

be maintained to help superintendents justify their use of water on the course. "History has shown when water supplies get short, turf generally receives a low priority," he said.

Rhode Island's Dr. Richard Skogley echoed Beard's remarks saying, "There is too much how-to today, and not enough why." Speaking on changes in turfgrass management, Skogley cautioned the Canadian superintendents that sand topdressing has its drawbacks and suggested soil topdressing instead. "Sand topdressing is better than not topdressing at all," he said. "It provides an improved putting surface. Once you start sand topdressing, you can't stop without causing layering and water problems. Sand requires more water and fertilizer.

With sand, you have to topdress monthly. You only have to topdress twice per year with soil. Also, we've seen reduced disease with soil topdressing compared to sand."

DISEASES

Canada's Burpee offers disease tips

More emphasis should be put on the turfgrass environment, Dr. Lee Burpee of the University of Guelph told superintendents at the Canadian Turfgrass Conference.

Burpee provided some tips to discourage disease. "If you won't to control disease, reduce the period of leaf wetness," Burpee said. He also recommended watching the pH of the soil and thatch since grass under stress is

continued on page 16

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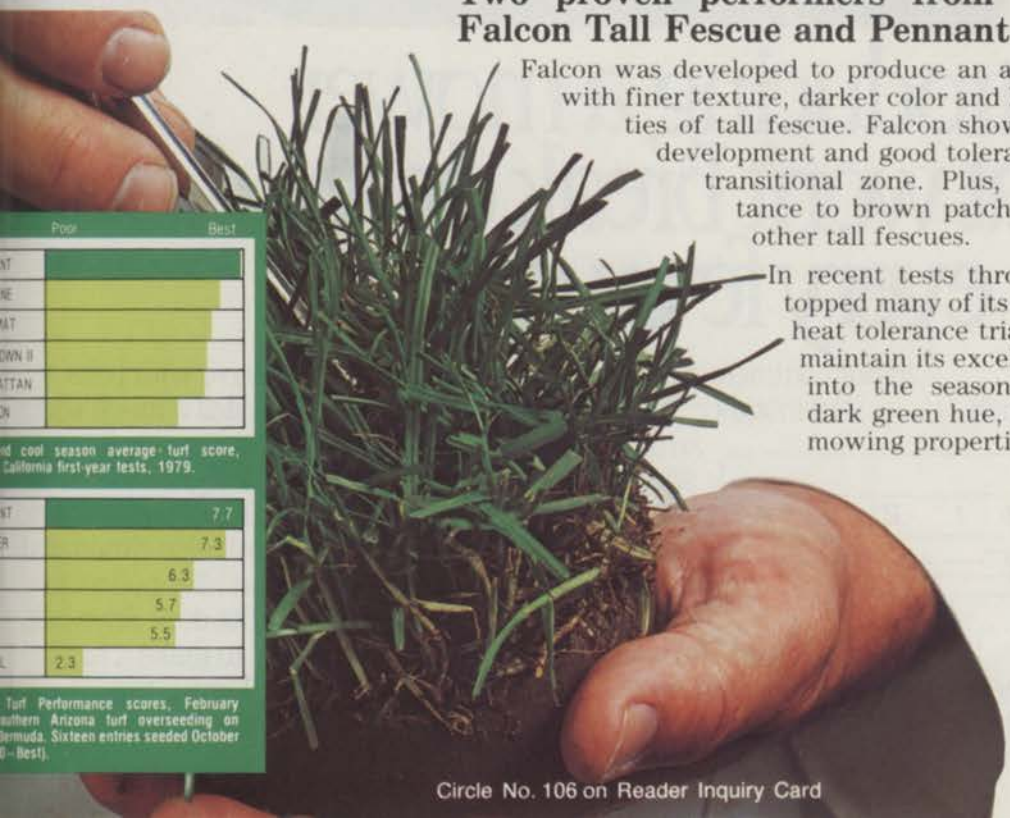

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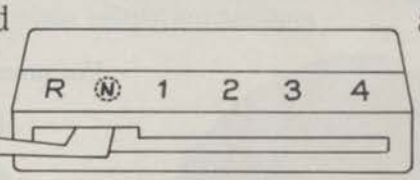
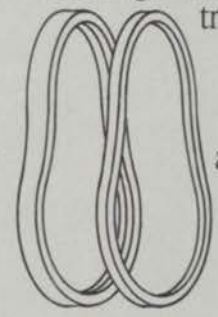


You won't find that with Toro's new 36″ and 52″ commercial walk rotary mowers. Because we build them with the same durability we build in our commercial riding mowers.

For instance, we gave them an actual 4-speed transmission with neutral and reverse. So they won't lock into a single speed like some variable speed pulley systems.

And, knowing the continual problems you have with belts breaking, we added a much wider traction belt that's designed to last the life of the machine. We also eliminated an idler pulley on the deck drive belt, to make it last longer, too.



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cutting spindles are engineered and protected to better withstand the shocks and jolts of everyday cutting.

While we were making our new commercial mowers tougher, we decided to make them more productive, as well.

We gave them a floating deck, same as our Groundsmasters,® so they'll follow the contours of the terrain while minimizing scalping.

We made it possible to change the height of cut in a minute by simply moving four pins.

And we came up with a new steering design that makes it easier to maneuver around trees, shrubs and other obstacles. You simply push the steering bar to mow, and release it to stop.

If our commercial walk rotary mowers are beginning to sound like no other walk rotary mowers you've ever seen maybe it's because they are. Visit your Toro distributor soon. He can fill you in on all the details.

Whichever one you choose, it'll keep you cutting yard after yard, year after year.

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The investment you make—in time, labor, product and equipment costs—should not only pay-off with the most healthy looking turf possible—it should also yield other high-interest dividends such as repeat business, happy customer referrals and increased profitability.

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LANDSCAPE UPDATE

AAN opposes Fed "giveaway" bill

In a letter to members of the House Committee on Energy and Natural Resources, the American Association of Nurserymen recently voiced its opposition to the proposed H.R. 2838, a bill to permit federal nurseries to give surplus stock grown for reforestation programs to nonprofit groups for planting on local, state or federal "public" lands.

According to the AAN, this giveaway program will be in direct competition with the private sector; the association feels that the program, too, will be difficult to administer and monitor. Said a spokesman, "we feel confident, unfortunately, that the use of surplus stock will extend far beyond the stated purposes of the bill."

Perhaps most importantly, the AAN believes the bill is an ineffective attempt to deal with a symptom rather than the cause of the problem (of government overproduction), as the government, "need not and should not be, in the nursery production business to begin with."

The spokesmen went on to say the private sector is capable of producing the seedlings which the government may need for reforestation purposes. As a matter of principle and national policy, the government should not compete with the private sector.

ALCA membership tops 1,000

In its 1983 annual membership report, the Associated Landscape Contractors of America, reported its membership has grown to more than 1,000 members, broken down into the following categories: 759 contractors; 92 associates, 4 student chapters; 118 affiliates and students; 34 international and 12 sponsors.

ALCA President David R. Pinkus said that in 1983, membership reached its highest point ever. Revenue from new members exceeded 1982 by well over 50 percent.

Membership committee members and the ALCA staff said the program to identify and solicit new members will continue throughout 1984.

First irrigation designers certified

Twenty-two applicants have passed all three levels of the Irrigation Association's Irrigation Designer Certification Program and have become the first Certified Irrigation Designers under the program initiated a year ago.

The first Level III exam, the final step in the certification process, was given in conjunction with the Agri-Turf Exposition in Denver in December Thirty-one registrants took the exam. There was a 71 percent passing rate.

Those passing the exam, among other things, will have their names included in a Certified Irrigation Designer Directory which will be published shortly and made available to irrigation specifiers.

UPDATE

Dicofol link to DDT raised

Two U.S. Senators have asked EPA to look into Dicofol, the ingredient in Kelthane, charging it contains as much as 15 percent DDT. EPA Assistant Administrator for Pesticides and Toxic Substances John Moore told the Senators it would be difficult to determine the residues of dicofol compared to DDT, since DDT residues still exist.

Dicofol is used primarily as an acaricide for cotton and citrus. It also has landscape uses.

The issue was raised as a result of the recent controversy over EDB (ethylene dibromide), a citrus fumigant. Moore said tests show dicofol is stable for 350 days in field plots, but can last for four years is soils.

EPA explores chemigation regs

Concern over contamination of irrigation water sources by EPA is being discussed with the National Agricultural Chemicals Association. EPA and NACA have reached agreement on additional statements on labels requiring backflow prevention on irrigation systems into which pesticides are injected. Chemigation is a growing area in both agriculture and landscape maintenance.

Defense cites Fifth to Monsanto

The Fifth Amendment has become a major issue in Monsanto's Supreme Court case against EPA and Stauffer Chemical Co. over use of glyphosate health and safety data.

Deputy Solicitor General Lawrence Wallace, defending EPA, told the Supreme Court EPA did not exceed Monsanto's rights under the Fifth Amendment. Wallace claimed EPA has the authority of Congress to negotiate compensation for data submitted to gain registration.

Monsanto's attorney Raymond Randolph Jr. told the Court that state and Federal law recognizes trade secrets as property, emphasizing the cost of developing data to meet EPA requirements.

Many registrations are held up by EPA until data compensation is clarified. The Court must decide on the case before its summer recess.

Geographic label limits sought

EPA is exploring geographic restriction on pesticide labels to prevent their use in areas with groundwater contamination problems. This would protect pesticides from national or state cancellation because they present problems in just one area, i.e. the high water table and sandy soil of Long Island. EPA's Office of Pesticide Programs will monitor groundwater by region to determine areas to be restricted for use of certain pesticides.

BURPEE *from page 10*

Dr. Lee Burpee *speaks on diseases to the Canadian Turfgrass Conference in Toronto in March.*

more likely to be hit by disease. If a problem develops, such as anthracnose, start applying fungicides in June. For other Poa annua problems, the population of annual bluegrass can be reduced by overseeding with perennial ryegrass instead of bentgrass and controlling irrigation levels.

Burpee said he sees progress in the area of biological disease control. Diseases have been reduced by 50 percent by inoculating turf with another organism which discourages pathogens.

CONSERVATION

L.A. Water donates seeds for Olympics

As part of a major beautification and conservation effort taking place in Los Angeles for the 1984 Olympic Games, the Department of Water and Power, Los Angeles, has donated 100 one-pound bags of wildflower seeds to community groups.

The wildflowers are estimated to cover nearly 20 acres, or the equivalent of 200 average-size city lots.

Duane L. Georgeson, DWP chief engineer of water works, explained, "These donated seeds, which are a mixture of 12 different wildflowers, will bloom into red, white, and blue colors.

They will not only help beautify Los Angeles, but will also help in the efficient use of water, since once established, they need little, if any, irrigation." The seeds were distributed to a diverse group of local improvement associations in the area, called Los Angeles Beautiful.

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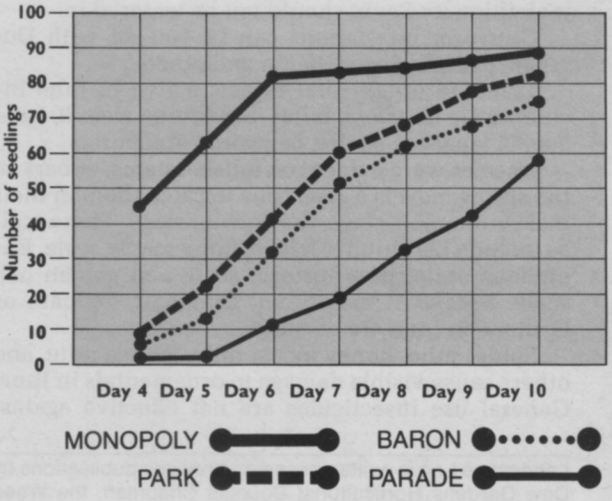

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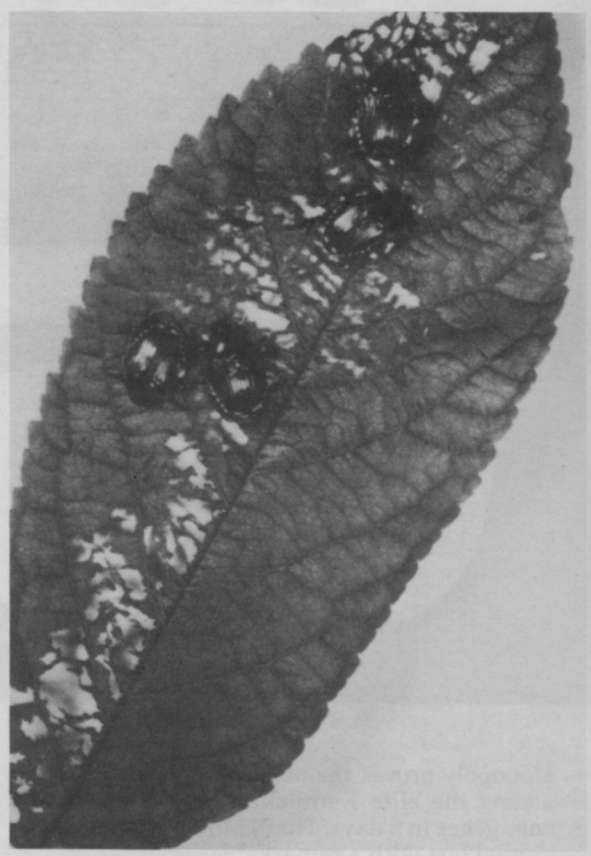
Circle No. 175 on Reader Inquiry Card

Insects and diseases attack in June

As work schedules fall into place in June, insects and diseases begin their attack on the landscape. Although a great deal about insects and diseases is predictable, the landscape manager is never certain when and where they will strike and to what degree of severity.

Entomologists and agronomists have a foothold on a computer modelling system to anticipate severe outbreaks of these pests. Perhaps by 1990 scientists will be able to project damage, and landscape managers can plan accordingly. Until they accomplish this, planning for insects and diseases is like planning a picnic in April.

To assist you in the fight, *Weeds Trees & Turf* publishes the Insect Control Guide in this issue and the Disease Control Guide in the May issue.



June means *the beginning of Japanese beetle feeding on landscape foliage.*

Insect control

June is the peak hatch for many turf insects; including chinchbugs, mole crickets and turfgrass Ataenius. Cutworm larvae are now large enough to cause visible damage. Billbug larvae feed on grass stems in June. Grubs have stopped feeding and burrow into the soil to pupate.

Oftanol applied now will help control billbug and chinchbug larvae and grubs as late as August. If residual is not important or desirable, control of larvae is possible with diazinon, Turcam, or Proxol, followed by irrigation.

Mole cricket control is a choice of sprays in early June and baits in late June. Sprays of MoCap, Sarolex, or Baygon, should be watered in. Baits of Baygon, malathion, or Sevin should not be watered in.

Cutworm infestations can be treated with Dursban, Proxol, Aspon, Sevin and others.

Tree and ornamental insects active in June include scale crawlers, mites, black vine weevil, June beetle, Japanese beetle, bagworm, and borers.

If scales were evident on foliage, stems, or bark in the spring, now is a good time to catch them in their most vulnerable stage, the crawler stage. These scales include Lecanium scale, cottony maple scale, Euonymus scale, pine tortoise scale and golden oak scale. Sprays of malathion, Diazinon, Turcam or Orthene in June are effective.

Spider mite, honey locust mite, spruce mite, and others cause visible damage to ornamentals in June. General use insecticides are not effective against mites. Miticides include Dicofol (Kelthane), Vendex, Plictran, and dymet.

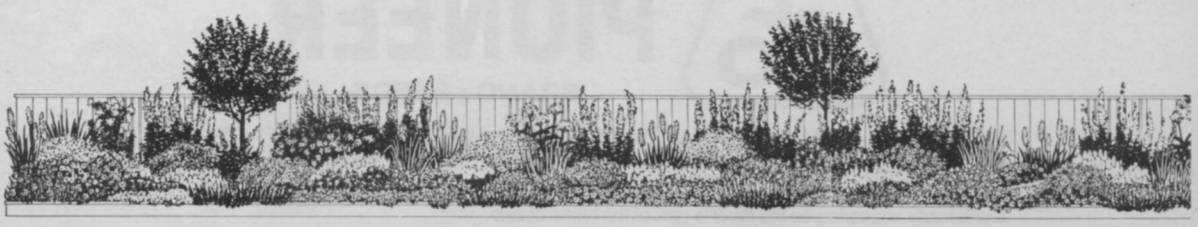
Black vine weevil continues to increase its damage to yews. The June beetle is causing severe tree defoliation in some areas. Research has shown that major infestations of June beetle are predictable due to the insect's three-year cycle. Orthene and Turcam are effective on these two insects.

Japanese beetles become adults in summer and ravenously consume foliage. Periodic sprays of Sevin, Turcam, methoxychlor, and Diazinon are needed to contain large infestations.

Bagworms on narrow-leaf evergreens should be caught when still young in early June with applications of Sevin, Diazinon, Malathion, Orthene, meth-

continued on page 88

Landscape Log is written based on previous publications by Dow Gardens Horticulturist Douglas Chapman, the Weed Control Guide from March 1983, and TECH SPECS from August 1983.



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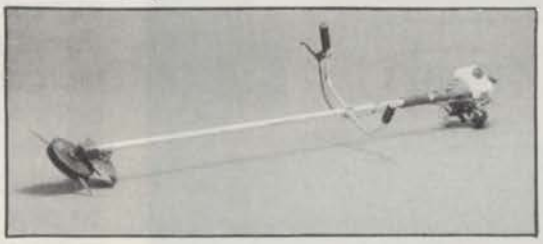
Circle No. 154 on Reader Inquiry Card

Trimmer makers see trend toward gas, blades over line

by **Bruce F. Shank**, executive editor, and **Kevin Cooney**, assistant editor

Handlebar and 40 cc engine *give commercial strength to Echo's 400 AE, above left. Hoffco's GT160T is popular with homeowners trading up to commercial type trimmers.*



One-wheel design *and Briggs and Stratton engine, shown above, make the Byho edger rugged and fast. At right, rotocut blade on Stihl FS 65 can replace nylon line for tough weeds.*

Strictly a professional tool in the beginning, the power trimmer drifted away from the professional to the consumer market with the use of nylon line. Today, trimmer manufacturers are refocusing on the needs of the professional landscape manager.

Those needs appear to be longer-lasting, smoother running engines and blades instead of nylon line, according to manufacturers interviewed by *Weeds Trees & Turf* in March.

Despite the increased professional use of chemical trim with products such as Roundup, manufacturers report trimmer sales have grown. "Our sales to the professional market were strong during the recession," says Clampco's Stephen Nathan. "Landscape contractors tend to deal with middle to upper income homeowners and commercial accounts that are less affected by recession. We've also seen increased capital spending by golf course superintendents."

"The total market increased nearly 25 percent last year," says Rich McGuire of Stihl. "The market isn't anywhere near saturated yet. People are trading up and using the trimmers for more jobs. The lawn edger on wheels is almost a thing of the past."

The typical homeowner does not use chemical trim products, depending mainly on electric, and increasingly, gasoline-powered trimmers. Carol Smith of Hoffco claims professional chemical trim has not made a dent in their business, "Maybe a certain percentage of the market will go to chemical trim, but we don't think it is going to hurt us. We spend a lot of time in development and research, always trying a different carburetor, clutch design, or our patented flexible shaft."

"The basic concept is not going to change," says Echo's Tom Boscher. "You're always going to have a device to turn a head, whether it is a nylon monofilament line or saw blade for brush cutters."

"Contract landscapers tried out the string trimmers, and I think they found they are not as durable as a blade timmer or edger," Nathan points out. Golf course superintendents have tried chemical trim and growth regulators more than Clampco's other customers.

Weedeater's Phil Hayes says gasoline trimmers are the fastest growing area of his company's business. "We've got a couple of innovations this year, including removable heads and fuel injection starting," Hayes says. "We

continued on page 86

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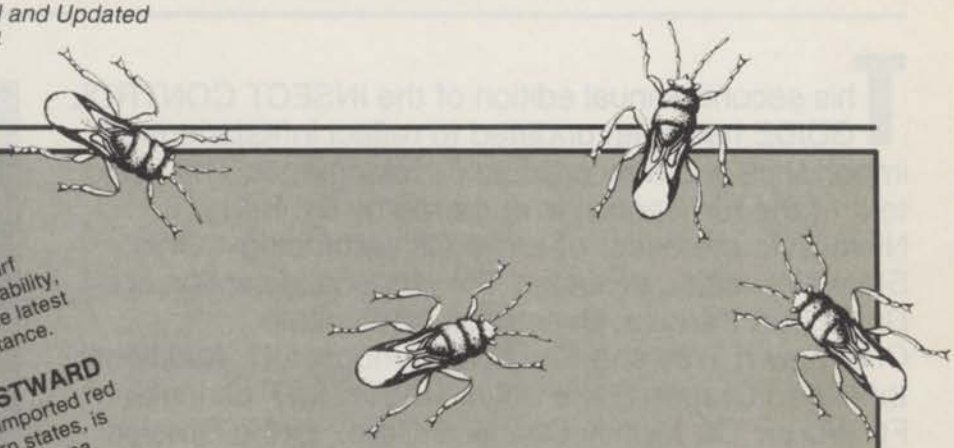
Revised and Updated for 1984



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Use the convenient circle number system to find out more about specific insecticides for turf and landscape.

TURF

by Dr. Harry Niemczyk

This second annual edition of the INSECT CONTROL GUIDE has been updated to reflect infestations of importance and new product developments. The basic text of the turf section is authored by Dr. Harry Niemczyk, professor of turfgrass entomology, Ohio State University, Wooster. The landscape section is by Dr. Robert Partyka, Director of Horticulture, ChemLawn Tree and Shrub, Columbus, OH. Additional thanks to Oregon State University, Ricks Pluenneke of Ft. Worth, TX, Mobay Chemical Corp., Ortho Division of Chevron, and Dr. Reed Funk of Rutgers University, NJ.

Substantial progress has been made in identifying varieties of cool- and warm-season turfgrasses that show resistance or at least tolerance to feeding by insect pests, such as the chinchbug, billbug, and sod webworm. The recent discovery by Dr. Reed Funk of Rutgers University that a species of fungus (called an endophyte), growing within certain ryegrass and tall fescue plants somehow imparts resistance to feeding by certain insects, holds much promise for the future.

While research on alternatives and supplemental means of controlling damage to turfgrass by insect pests is making rapid progress, insecticides remain the primary means of control in 1984.

New insecticides

Ciba Geigy expected EPA registration for its Triumph insecticide in 1983. Submitted for registration in 1982, Triumph has now been reviewed by EPA and approval is now expected during the spring or early summer.

When registered, a 4E formulation will be available for professional turf applicators.

Research data on Triumph has shown effectiveness on a broad range of turf pests; including grubs, mole crickets, chinchbugs, billbugs, sod webworms, and cutworms. The label rate is expected to be 2 lb. AI/acre for grubs and mole crickets and 1 lb. AI/acre for surface insects.

The rapid effect of this insecticide against grubs and mole crickets, plus the fact that it moves readily through thatch, are its greatest benefits. It is not a long residual product.

Ortho Division of Chevron expects a turf label soon for Orthene (acephate). Pests on label include armyworm, sod webworm, leafhopper, and Greenbug.

Keys to control

The key to successful use of these materials requires knowing the seasonal occurrence of all life stages of each pest common to your area. This information, together with the known length of the residual of the proposed insecticide, are then fitted together to achieve control. Detailed knowledge of pest(s) and pesticides are and will continue to be essential.

The purpose of this guide is to point out some major pests to look for in 1984, when their vulnerable stages occur, and some insecticides that may be used to affect control during these times. No endorsement of named products is intended nor is criticism implied for those not mentioned.

Clover mite damage *to fine fescue lawn (above) and a magnified view of the mite in the circle.*

LATE WINTER (March)

Chinchbug and Billbug—Both of these insects overwinter as adults in the thatch, but some move to sheltered sites near buildings or other protected locations. On warm days, the insects begin moving about.

When summer damage from chinchbug and/or bluegrass billbug is expected, summer infestations can be prevented with an application of liquid or granular Dursban® (chlorpyrifos, 1 lb. AI/acre) or Diazinon (2.5 lb. AI/acre) made as soon as these insects be-

Damage to Penncross bentgrass *greens caused by Ataenius spretulus at Laurel View Country Club, Hamden, CT.*

Chinchbug damage *to lawn and a drawing of the insect in the circle.*

gin to move about. If spring is late, this could be as early as the first or second week of March.

Grubs—The larvae of this group of pests normally overwinter six inches or deeper in the soil. If spring comes early, grub activity can be expected along with skunks and racoons who will tear up the turf searching for the grubs.

Application of Oftanol® (isofenphos, 2 lb. AI/acre) during March when frost is gone from the ground, provides control of overwintered grubs as they return to the surface. In most cases, such a treatment will provide adequate control of fall grub infestation. In addition, treatment at this time kills overwintering chinchbugs and billbugs and prevents infestation of these insects during the summer.

Mole Cricket—The biology of mole crickets varies considerably with the species and is still under study in many areas. Generally, these insects overwinter as adults deep in the soil, however some overwinter as nymphs.

Feeding activity resumes in March. Both adults and nymphs feed at night near the surface on turf roots, organic matter and other insects. During the day, mole crickets return to permanent burrows.

In years when feeding of overwintered mole crickets resumes earlier than normal, Oftanol® (2 lbs. AI/acre) has been used with some success. Generally, such applications are better made during May.

Black Turfgrass Ataenius—This golf course pest overwinters as an adult in the soil under debris in roughs or other protected areas. A few may be seen flying about on warm afternoons in early March. Usually this activity begins when crocus starts blooming and inten

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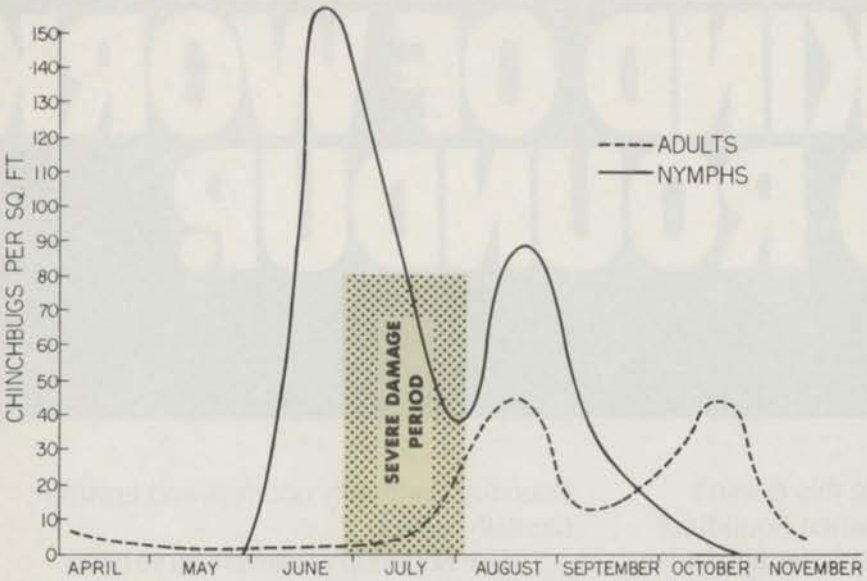


Life cycle of the chinchbug *shows a treatment made in May will be effective in controlling nymphs, before they become adults and lay eggs, and before damage is greatest in July.*

sifies as the bloom of red bud appears.

While an application of Oftanol® in March may be successul in preventing summer infestations of larvae, the probability of success is increased by waiting until April.

Greenbug—The only stage of the greenbug known to overwinter in northern states is the egg. Shiny black eggs deposited the previous fall may be found adhering to grass blades, fallen tree leaves or other debris.

Treatment for greenbug is not appropriate during late winter.

Sod Webworm—The most common sod webworm species on northern turfgrasses overwinter as larvae in the thatch or upper inch of soil. Feeding does not resume until hibernation (dipause) is broken by early spring warmth.

Treatment for sod webworm is usually not appropriate during late winter.

SPRING (April-May)

Chinchbug and Billbug—As warm days of May approach, movement of chinchbug and billbug adults increases rapidly. Generally, egg laying begins during May, but may occur as much as a month early in some areas. Occasionally on warm afternoons, adult billbugs can be seen wandering about on sidewalks.

Generally, application of insecticides to prevent infestations of chinchbugs and billbugs should be completed by the first week in May, before significant numbers of eggs are laid. This time may vary as much as a week or more depending upon the spring weather.

Grubs—Overwintered grubs return to the surface and begin feeding on turfgrass roots in April. Increased activity and damage from moles, skunks, and racoons foraging on grubs can also be expected. Feeding by mammals and grubs continues through May.

A single application of Oftanol® (2 lbs. AI/acre) made during during April has been successful in controlling overwintered grubs and preventing subsequent infestations during late summer. Application made during May may not provide immediate control, however, prevention of the late summer infestations may be expected.

Infestations of grubs can also be controlled during April or May by spot or general treatment with Diazinon (5.5 AI/acre), Turcam® (bendiocarb, 2 lb. AI/acre), or Proxol (Trichlorfon, 8 lbs. Ai/acre). Golf course superintendents may also use Nematicide/Insecticide (ethoprop, 10 lbs. AI/acre). Irrigation or rainfall should follow such applications, to move the insecticides to the target grub as soon as possible.

Although milky spore disease products for control of Japanese beetle grubs may be applied anytime there is no frost in the ground. Spring is a good time for such applications because the soil is open and frequent rains help carry the spores deep into the soil. Remember, such products are effective against the Japanese beetle grub only.

Infestations of large grubs (larvae of June bugs) have been occurring on a three-year cycle in some areas of Michigan and Minnesota. Locations of such infestations should be identified because reinfestation is likely every three years.

Controls, such as Oftanol®, Diazinon, Proxol®, or Turcam should should be applied in August or September during years when large numbers of adults are seen. Eggs are laid in May and June, therefore treatment should be applied in late summer, early fall of that year or early the next spring while the larvae are small. Later applications against full-grown larvae have given inadequate control.

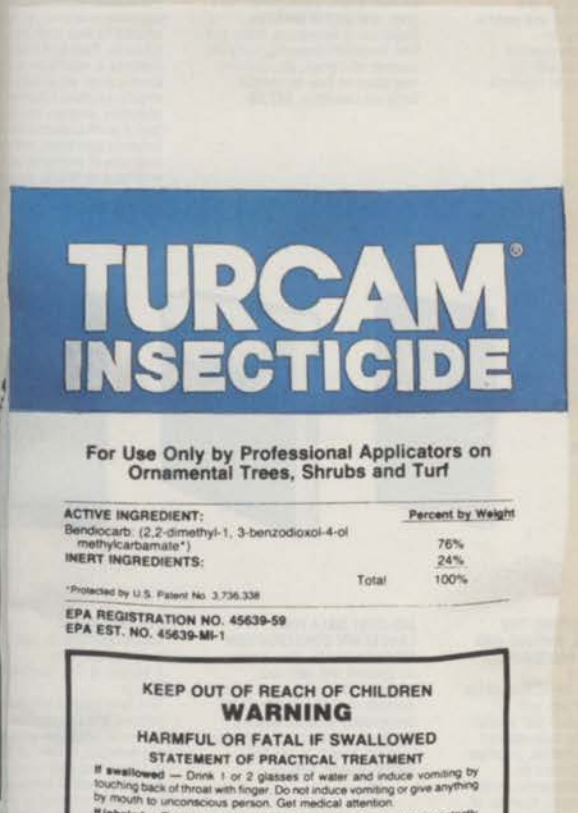
Mole Crickets—Mature adult mole crickets emerge from the soil in May and engage in mating and dispersal flights. Eggs are laid in chambers hollowed out in the upper six inches of soil.

Though some variation in results has been experienced, application of Oftanol® (2 lbs. AI/acre) during this time has been generally successful in preventing summer damage. Irrigation following treatment is advisable.

Black Turfgrass Ataenius—Adults of the black turfgrass ataenius can be seen flying about in April and are often found in clipping catchers after early

continued on page 36

UNDERCOVER AGENT



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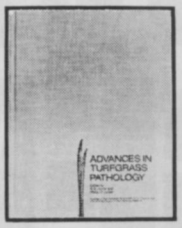

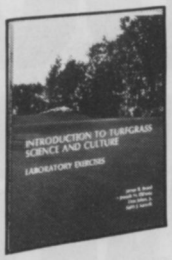

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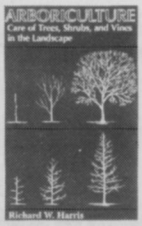

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Provides comprehensive coverage of complete planting, site analysis, preparation and special planting methods, fully-detailed coverage of fertilization, irrigation and pruning guidelines on preventative maintenance, repair and chemical control, how-tos of diagnosing plant problems, practical data on non-infectious disorders, diseases, insects and related pests and pest management. **$34.95**

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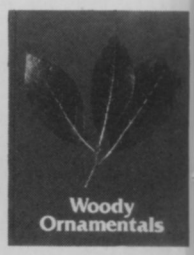

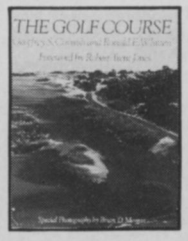

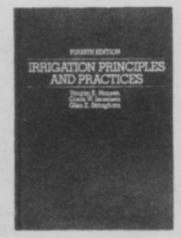

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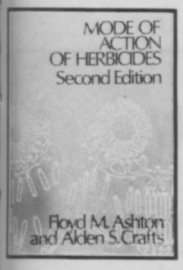

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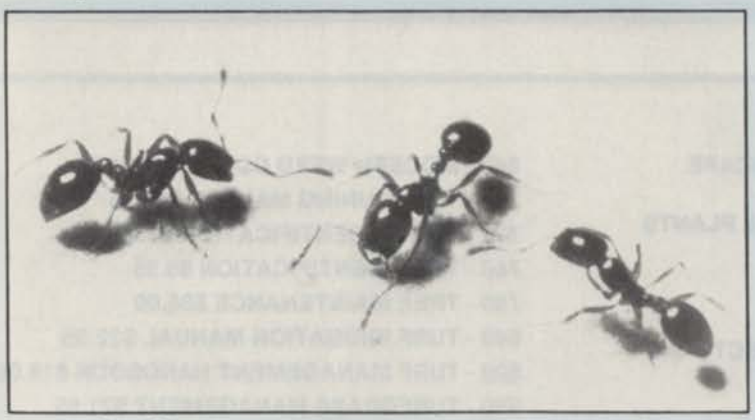
WTT 54

Fire ant spread continues, millions bitten monthly

The imported red fire ant reportedly bites more than 2.5 million Americans each month. Its painful bite makes this insect the nuisance pest of the 80's.



Imported red fire ants.

Both black and red imported fire ants entered the U.S. from South America in 1918 through the port of Mobile, AL. The black version hasn't been nearly as successful in spreading across the South as its cousin has. The red imported fire ant reached Texas in 1953 and currently occupies portions of Florida, Georgia, South Carolina, North Carolina, Oklahoma, Arkansas, Tennessee, Mississippi, Alabama, and Louisiana. Experts expect the pest to find its way to the humid portions of California and Arizona during this decade.

According to Ricks Pluenneke in Fort Worth, TX, red fire ant mounds range from small to two-feet in height and two or more feet wide. Farmers have reported as many as 200 mounds per acre of pasture.

The ants construct a network of tunnels and chambers in the mound and in the soil beneath the mound. They move to the most comfortable portion of the den with changes in temperature and moisture. "Extremely wet weather is a good time to treat because the ants come out of the ground to work on the mound," says Dr. Craig Sheppard, research entomologist for the Coastal Plain Experiment Station, Tifton, GA. "The ants are harder to control in extremely hot, dry weather or in the middle of a summer day, because they are deeper in the ground at these times."

Baits, drenches and fumigants have been tried to control the ants. Baits are effective during warm days when the ants are actively feeding. American Cyanamid developed the bait Amdro specifically for the fire ant.

Drenches are useful at any time. Pluenneke recommends five gallons of insecticide solution per mound, making sure to flood all tunnels and chambers.

Most soil insecticides can be used for drenches, including Dursban, Orthene, Oftanol, Diazinon, Mocap and others. Orthene 75S, for example, is mixed with water at the rate of one ounce in five gallons of water. Ortho recommends a four-foot diameter area around the mound be soaked as well as the mound. Disruptions to the mound should be avoided or the ants will attempt to hide the queen, says Sheppard.

A combination of controls on a regular basis may be needed to prevent reinvasion from adjacent untreated areas. □

mowing of golf course greens. These adults begin laying eggs in early May, or about the time Vanhoutte spirea first comes into bloom.

Application of Oftanol® during April or May has successfully prevented larval infestations during the summer. Diazinon (5.5 lbs. AI/acre) applied to fairways when Vanhoutte spirea first comes into bloom, kills egg-laying adults and also prevents the development of summer larval infestations.

Sod webworm—Overwintered larvae of the sod webworm begin feeding as soon as the grass begins to grow. Usually damage is insignificant, but areas which do not green-up may be infested. These areas frequently have probe marks from starlings who feed on the larvae.

When necessary, a wide range of insecticides including Diazinon, Dursban®, Proxol®, Aspon, Sevin® (carbaryl) and others applied at labelled rates may be used to obtain control.

Black Cutworms—Moths of the black cutworm begin laying eggs

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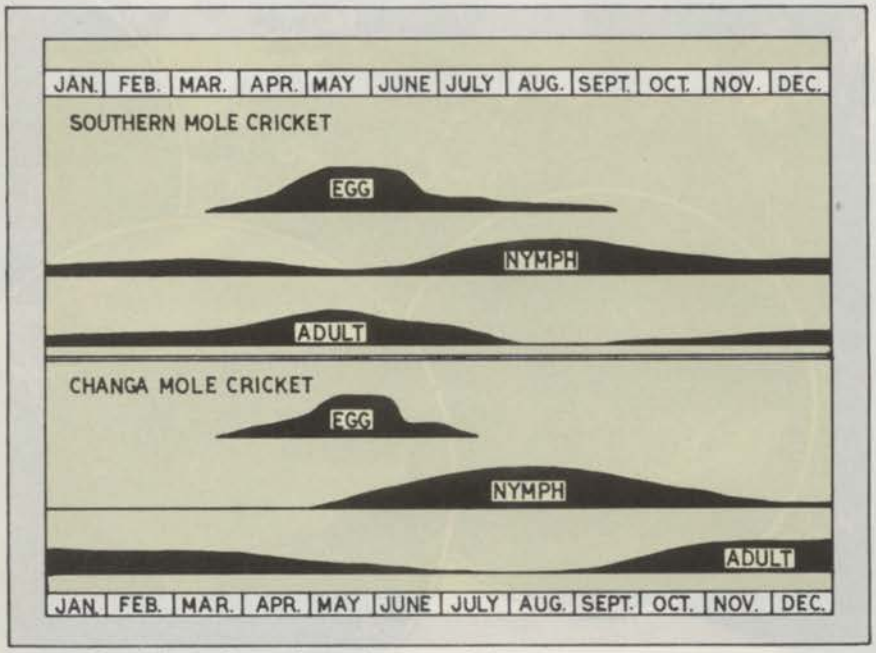

Life cycle of the mole cricket *indicates adult treatment is most effective in May and nymph treatment in late June.*

on golf course greens and other turf areas in the spring. These eggs hatch producing larvae that feed on grass blades during the night. While visible damage is uncommon on home lawns, damage can be significant on golf course greens in late May.

Generally, the insecticides effective against the sod webworm are also effective against cutworms. The principle of controlling these pests is to apply the insecticide late in the afternoon to the grass and allow the cutworm to feed on and contact the treated foliage. Irrigation following liquid application is therefore not advisable.

Greenbug—Greenbug eggs begin hatching as early as April, but significant infestations do not develop until later in the year. Aphid numbers are too low to detect.

Winter Grain Mite—Damage from this mite is often first noted in April when home lawns are receiving spring pesticide and fertilizer applications. By late May, the mites will have laid their eggs and died. Mites do not appear again until the eggs hatch in October.

If treatment is necessary, liquid Diazinon or Dursban® will provide control.

Clover Mite—Incidents of visible damage to home lawns were seen during April in several Ohio cities and Denver, CO. Usually a nuisance pest in and around homes, the clover mite appeared in large numbers (5,000 per square foot) across entire lawns and on turf next to building foundations. Symptoms of injury were the same as the winter grain mite. Turf next to foundation was often killed.

The clover mite has a slightly pink body, eight pale-colored legs. The first pair of legs are extremely long and protrude well out in front of the mite. The absence of bright red legs distinguishes the clover mite fron the winter grain mite.

Treatment with liquid Diazinon (2.5 lbs. AI/acre) or Dursban® (1 lb. AI/acre) readily provides control.

SUMMER (June-August)

Chinchbug—Chinchbug eggs begin hatching in May and continue into June when bright red nymphs appear. The number of chinchbugs increases rapidly reaching a peak during July when northern lawns can sustain severe damage.

During August the nymphs molt into adults that mate, lay eggs, and produce a second generation. Some northern areas have only one generation each year.

A wide range of insecticides, such as Dursban®, Diazinon, Aspon®, and Sevin® may be used at labelled rates to control existing infestations. Treatments should be applied *before* injury is severe, otherwise, damaged areas may not recover.

Billbug—Billbug larvae feed in grass stems during June but move to the plant crowns and roots during July. This feeding causes brown spots that frequently resemble the symptoms of some fungus diseases. During August the larvae burrow deeper into the soil to pupate and transform into adults.

Infestations discovered during this time may be treated with applications of insecticides such as Diazinon, Turcam®, and Proxol® at rates used to treat existing grub infestations. Irrigation or rain following applications is needed for optimal results. If larvae are feeding in the root zone, control may be difficult to achieve. Oftanol® applied during June controls feeding larvae and also provides control of late summer grub infestations.

Grubs—By June, grubs have stopped feeding and are in the pupal stage three to four inches deep in the soil. Beginning in mid-June and continuing through mid-July, the adults of various species emerge and burrow into the soil to lay eggs. Hatching and appearance of young larvae occur during July and August.

Oftanol® applied in June provides control of developing grubs during August as well as chinchbugs and/or billbug larvae present in the turf at the the time of application. Existing infestations of grubs found in August may be treated with Proxol®, Turcam®, Oftanol®, Diazinon, or

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Nematicide/Insecticide (golf courses only) at standard label rates. At least one-half-inch of irrigation following treatment maximizes insecticide effectiveness.

Mole Crickets—Mole crickets lay eggs through mid-June. Depending upon location, eggs hatch from early June through August with peak hatch during June.

In areas where damage occurred previously, sprays of Baygon® (propoxur), Sarolex® (diazinon), or granular Mocap® (ethoprop) at labelled rates have shown effectiveness when applied in early June. Irrigation of one-half-inch or more should be applied after treatment.

White grubs *can be found close to the soil surface after April and before November.*

Bait formulations with Baygon®, Malathion, or Sevin® have also been effective when applied during late June. Irrigation should not be applied for three to four days after application of baits.

Black Turfgrass Ataenius—Eggs laid by beetles during May hatch in June and the larvae begin feeding on the turf roots immediately. From late June to mid-July, symptoms of injury include wilting of the turf, in spite of irrigation. In July, larvae move deep into the soil, pupate and emerge as adults. In states such as Ohio, these adults lay eggs during August producing a second generation of larvae capable of damaging turf.

If a preventative program was not applied, existing infestation may be spot or generally treated with Proxol®, Turcam®, Diazinon or Nematicide/Insecticide at label rates.

Black Cutworm—By June, larvae of the black cutworm are large enough to cause visible damage to golf course greens. These larvae pupate in the soil or thatch and emerge as moths that lay eggs on the turf in July. The larvae of this second generation are present on greens in August.

Cutworm larvae can be controlled with a wide range of insecticides such as Dursban®, Proxol®, Aspon®, Sevin® and others, at label rates. Irrigation following liquid applications is generally not advisable.

Greenbug—Damaging populations of greenbug can occur from June through August. Populations and incidents of damage frequently varies from area to area,

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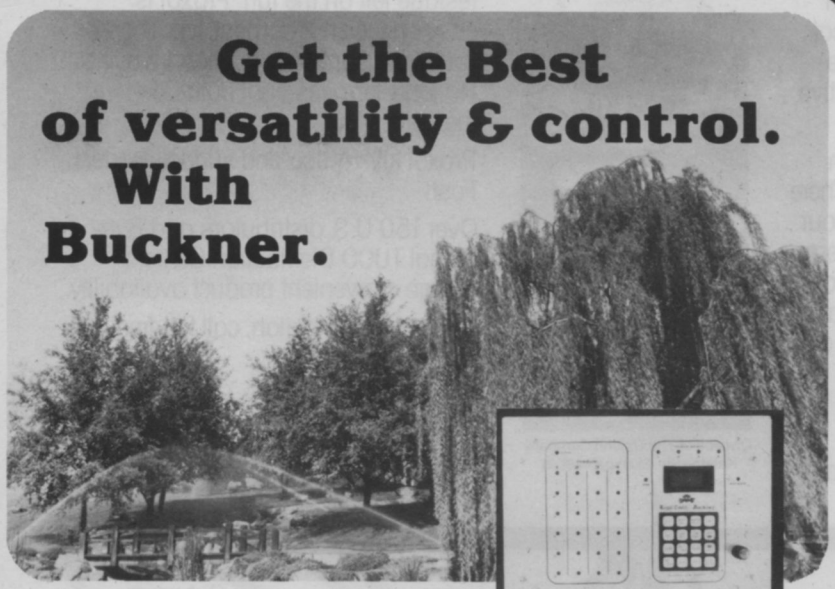
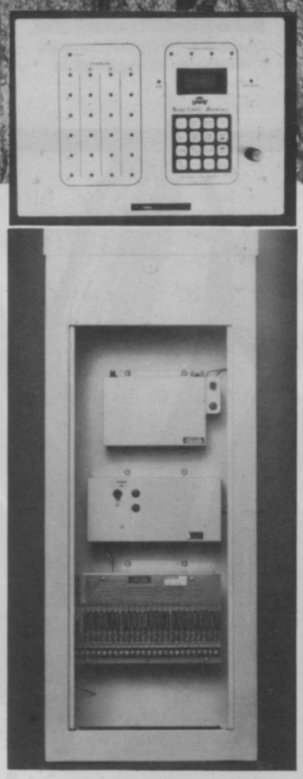




The best of both are as close as your Buckner Computer Controller with 24 stations. They consist of 4 modules of 6 stations each and work on-site by themselves with computer on and off control. In demand because you can separate the 4 modules to control turf, shrubs, or, critical areas separately!

One good thing deserves another, so ask about our unique lightning protection feature for bad weather . . . or, our special battery back-up that eliminates power failure worries!

You deserve the best with Buckner's CC-24.

Put some versatility into your life. Be in control. Contact us.

bringing the best. **Buckner®**
Royal Coach Sprinklers, Inc.

4381 N. Brawley Avenue Fresno, California 93711
(209) 275-0500 TWX 910 362 1167

Circle No. 146 on Reader Inquiry Card

ONE GOOD PRODUCT... TWO GOOD REASONS.

LESCO Sulfur-Coated Fertilizer Plus Oftanol®

One application eliminates white grubs, chinchbugs, sod webworms, mole crickets and other common insects — while providing a safe, long-lasting, slow-release fertilization. Good for the turf and good for you.

LESCO Fertilizer Plus Oftanol® is available in the following formulations: LESCO 30-3-8 plus 1.5% Oftanol® • LESCO 24-4-12 plus 1.5% Oftanol® • LESCO 24-4-8 plus 1.5% Oftanol® (specially formulated with iron and manganese for southern turfgrasses). Straight controls also available: LESCO Oftanol® 1.5% Granular • Oftanol® 5% Granular • Oftanol® 2 Insecticide. Oftanol® is a registered trademark of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen. Distributed by Mobay Chemical Company.

Call Barb to order.

(800) 321-5325 Nationwide

(800) 362-7413 Ohio

LESCO

Lesco, Inc., 20005 Lake Road
Rocky River, Ohio 44116

Circle No. 130 on Reader Inquiry Card

Rubigan E.P.A. Experimental Use Permit No. 1471-E.U.P.-50.

They're out of Rubigan

Times are tough for unwanted fungi when Rubigan invades their turf. Dollar spot (even fungicide resistant strains), large brown patch*, fusarium blight, stripe smut and pink or gray snow mold—these troublemakers get their walking papers, starting the day you hire Rubigan.

Prevents and cures.

In addition to the flexibility Rubigan gives you to manage a disease *prevention* program, it provides effective *curative* action on dollar spot when applied at slightly higher rates.

Rapid leaf penetration.

As a foliar-applied, quick-penetrating, locally systemic fungicide, Rubigan is absorbed almost immediately into leaf tissue. So it's not susceptible to washoff by rainfall or irrigation once the spray has dried on the leaf. While the spray is drying, the active Rubigan ingredient goes to work inside the plant to start protecting immediately against disease.

No resistance worries.

The bad news for common and susceptible turf fungi started years ago with successful Rubigan E.U.P. usage throughout the United States. Susceptible fungi commonly found in turf just plain haven't been able to develop resistance to Rubigan. The reason is the mode of action Rubigan has—involving three or more sites of inhibition. As a multi-site inhibitor, Rubigan simply attacks fungi at many different sites with a real tough active ingredient. This eases constant worries about resistance.

Longer-lasting control.

Because Rubigan is a very active, concentrated fungicide with long-lasting residual action (up to 28 days on dollar spot), it allows longer intervals between sprayings. So you can reduce application trips, save on fuel and labor. Lower use rates also mean less storage and lower handling costs.

Excellent turfgrass safety.

Rubigan is safe on all commonly grown perennial turfgrass species when used at recommended rates. Fact is, several university turfgrass researchers will tell you Rubigan is as good for your turf as it is devastating for the five major turf diseases it controls. To learn more on how Rubigan can be

*See label for tank mixes under moderate to heavy disease pressure.

work because works.

a cost-efficient cornerstone in building a sound turf disease prevention program, contact your distributor. Ask also about Balan, Surflan and Treflan for dependable weed control in turf and ornamental plantings. Or write: Elanco Products Company, 740 S. Alabama St., Dept. E-455, Indianapolis, IN 46285.

Poa annua growth regulating effect: Applications of Rubigan to turfgrass areas containing *Poa annua* (annual bluegrass) have demonstrated a growth regulating effect on this species. Under certain environmental conditions and cultural practices, Rubigan applications may gradually reduce *Poa annua* populations in treated areas. Users desiring more information regarding this aspect of activity from Rubigan should obtain the Rubigan Product Information Bulletin on *Poa annua* from Elanco Products Company or their Rubigan distributors prior to use. Do not use Rubigan on turfgrass areas containing *Poa annua* until this Product Information Bulletin is read and understood.

For best results always read and follow the label directions.

Precautions: Applications of Rubigan to turfgrass areas containing *Poa annua* (annual bluegrass) may result in the gradual reduction of this species from the turfgrass area. Cumulative dosages of 5 pounds of Rubigan 50W per acre or 2 ounces per 1,000 sq. ft. are usually necessary for this response to occur. If such a reduction or loss of *Poa annua* is not acceptable to the user, Rubigan can be used at the minimal label rate (0.2 oz. 50W/1,000 sq. ft.) or in alternating application with contact type fungicides.

Elanco Products Company
A Division of Eli Lilly and Company • Indianapolis, IN 46285

Turf products with benefits that make the difference.

Rubigan® (fenarimol, Elanco Products Company)

Circle No. 114 on Reader Inquiry Card

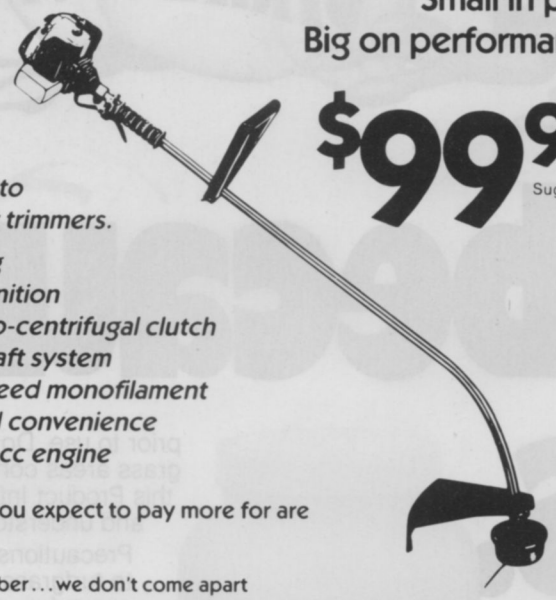
Always First
Always Outlasts

35 Years...
Est. 1949

Competition is the name of the game... and Hoffco is leading with the GT160T.

HOFFCO has the competitive edge!

the GT160T is...
Small in size
Small in price
Big on performance.



$99.95 Suggested List

Hoffco knows how to build monofilament trimmers.

- *Foolproof starting with solid state ignition*
- *Long wearing auto-centrifugal clutch*
- *Patented drive shaft system*
- *Automatic "tap" feed monofilament head for ease and convenience*
- *Dependable 15.4 cc engine*

Design features that you expect to pay more for are standard with Hoffco.

Remember... we don't come apart when you need parts... we deliver. Our Parts and Service Program is a unique part of Hoffco's total selling program... it works with you and for you.

Hoffco has a full line of 10 trimmer/cutters to choose from...

GT160T IS NOT DESIGNED FOR USE WITH BLADES

For more information:

HOFFCO INC., Dept. WTT4-584
358 N.W. "F" St., Richmond, IN 47374 Telex 20212

Circle No. 121 on Reader Inquiry Card

even within a city.

Symptoms of injury include turf under the dripline of trees and in open areas having a burnt orange color. When symptoms are seen, numerous aphids (40 or more) may be seen on a single grass blade. Close examination of damaged turf is necessary because the aphids are small. If left untreated, a heavy infestation can kill the turf. Little damage from this pest was seen in 1983.

Greenbug infestations may be controlled with liquid treatments of Dursban® (1 lb. AI/acre) or Diazinon (2.5 lbs. AI/acre). If reinfestation occurs following treatment with these insecticides, Orthene (acephate) at labelled rates has been effective.

FALL (Sept.-Oct.)

Chinchbug—In the northern U.S., the second generation of chinchbug is at peak numbers in September. Nymphs complete their development to adults in late October. Most chinchbugs overwinter in the turf, but some to protected areas before winter.

Generally, infestation levels at this time are not high enough to warrant the use of insecticides. Early fall rains and infection by a parasitic fungus usually provides sufficient suppression.

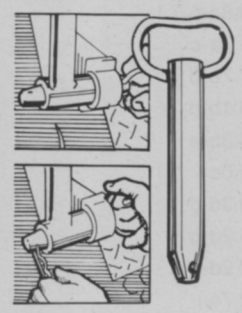
Billbug—During September, billbug adults that developed from summer larvae are often seen wandering about on sidewalks, driveways, or other paved surfaces. Before winter, these adults seek shelter in thatch, along sidewalk edges, or near foundations and overwinter there. However, many, if not most, overwinter in the turf.

Grubs—Most species of grubs are in the third of their three stages of development and are feeding actively. When soil temperatures decrease in late October the larvae burrow deep into the soil to overwinter. Severely cold winters have little effect on survival.

Treatments of existing grub infestations can be accomplished as late as early- to mid-September

What makes the Cushman Turf-Care System worth the investment:

Aerating, hauling, dumping, spraying, seeding, spreading and top dressing — one vehicle does the work of a fleet of machines.

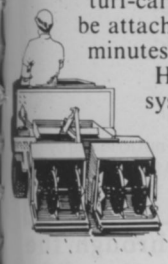


The exclusive Cushman pin disconnect system lets you attach and remove accessories in minutes.

The economics behind your decision to invest in the Cushman Turf-Care System are hard to argue with:

Here is a single vehicle that can do the work of a half dozen machines, at a fraction of the cost.

Here is a complete set of turf-care accessories that can be attached or removed in minutes.



Here is a groundskeeping system that's so simple, and so well-crafted, your maintenance and repair time will become practically non-existent.

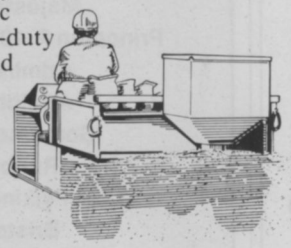
Economics aside, though, there is an even stronger reason to invest in the Cushman System.

Results.

The Turf-Truckster™.

Powered by a rugged 18 hp air-cooled engine, the Cushman Turf-Truckster has the stamina to survive years of constant use.

A 3-speed syncromesh transmission, hydraulic brakes, heavy-duty suspension and a ¾-ton payload capacity are all standard. And you can choose between a 3-wheel or 4-wheel design.



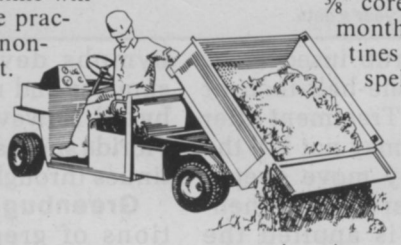
By itself, the Turf-Truckster is the industry's state-of-the-art work vehicle.

But team it up with any of the following accessories, and you have the makings of an efficient, economical turf-care system.

The aerators.

Because you have two types of turf to aerate, Cushman makes two aerator attachments for your Turf-Truckster.

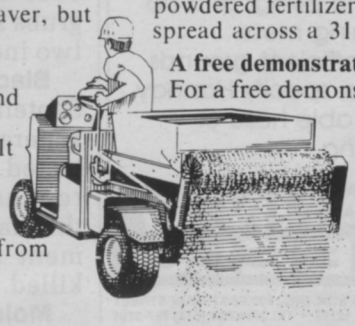
The Greensaver® is ideal for greens and other delicate areas. Interchangeable aerating drums let you select the precise degree of aeration needed — ½″ cores for fast-growth seasons, ⅜″ cores for slow-growth months, and deep-slicing tines for summer hot spells.



For the rest of your grounds, simply attach the Quick Aerator to your Turf-Truckster. It offers the same choice in aeration tines as the Greensaver, but covers a wide 46″ swath.

The dump boxes.

To haul fertilizer, dirt, sand and other supplies, choose our Short Box attachment. It handles 1500-lb. payloads, sits low to the ground for easy loading and can be hydraulically dumped right from the driver's seat.



But for maximum versatility, you may prefer our Flatbed/Box attachment. It does everything the Short Box does, but converts to a flatbed carrier just by removing the sides and tailgate.

The sprayer.

Turf pros swear by this as the finest spraying machine they've ever used. And it's no wonder when you consider all you get:

Uniform spraying controlled by your vehicle's ground speed governor; a PTO-operated centrifugal pump; and your choice of either a 100-gal. tank with a 15′ rear boom, or our new 150-gal. tank with a 21′ rear boom.

Plus, you can add a versatile handgun attachment for fogging bushes and spraying trees.

The spreader/seeder.

Mounted on either side of the two Cushman dump boxes, the Spreader/Seeder attachment actually outperforms units costing much more.

The spreading rate is regulated by your Turf-Truckster's ground speed governor. Even over irregular terrain, you get uniform spreading.

The corrosion-resistant hopper holds up to 300 pounds of material, and spreads it evenly across a swath up to 40 feet.

The top dresser.

Just 3 pins connect the Top Dresser to your Turf-Truckster chassis, and you're ready to top dress up to 220 feet per minute.

Everything from rock salt to powdered fertilizer can be uniformly spread across a 31½″ swath.

A free demonstration.

For a free demonstration of the Cushman Turf System, call Toll Free: **1-800-228-4444** or write: 5233 Cushman, P.O. Box 82409, Lincoln, NE 68501.

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Circle No. 110 on Reader Inquiry Card

PORTABLE REELS FOR WATERING, SPRAYING, FERTILIZING, CLIPPING, EDGING, TRIMMING

Hannay Reels on Wheels take hose or power cable straight to the job and back.

No hassle, no hauling, no dragging, no unkinking, no untangling, no piling, and no time-consuming mess.

For more efficient grounds maintenance, specify Hannay Reels for portable hose or cable handling.

HANNAY REELS

CLIFFORD B. HANNAY & SON, INC., 600 EAST MAIN STREET
WESTERLO, NEW YORK 12193 • TELEPHONE (518) 797-3791

Circle No. 120 on Reader Inquiry Card

TURF

Reaction of Kentucky Bluegrass Varieties and Selections to Injury by the Bluegrass Billbug.

Variety or Selection	Percent of Turfgrass Damage	Number of billbug Larvae per sq. ft.
BA63-188	13.3a*	
Midnight	14.0a	
F-1757	24.7a-b	12.3*
F-353	26.7a-b	13.0b
EVB 3275	27.3a-b	
Kenblue	27.4a-b	1.3a
Eclipse	30.3a-c	
America	31.7a-c	
Majestic	37.7b-d	
Princeton P-104	39.1b-d	14.8b
Admiral	43.3b-e	
Adelphi	49.0c-f	
Somerset	53.3d-g	
Rugby	54.2d-g	
Fylking	57.2d-h	
Bristol	62.7e-i	
Touchdown	63.33-i	
Enmundi	63.3e-i	
Plush	64.3e-i	
Baron	67.8f-J	51.0c
Bonnieblue	69.3f-j	
Birka	71.0g-j	
Merion	76.0h-j	57.8c
A-34	78.2i-j	
Victa	79.5i-j	
Nugget	82.4i-j	60.3c
Cheri	83.5i-j	45.3c
K3-182	87.0j	18.5b
Ram I	89.3j	

*Means values: N = 3 for turfgrass damage and N = 6 for billbug counts. Means not followed by the same letter are significantly different at 5% level by Duncan's multiple range test.

Test results from one year's data.

using standard grub insecticides and sufficient (one-half-inch or more) irrigation. Treatment after this time may or may not kill the grubs before they move deeper into the soil to overwinter. Whenever treatment is applied the grubs should be in the top one to two inches of soil.

Black Turfgrass Ataenius—By September, adults of the current generation begin to fly into protected areas, such as golf course roughs, to overwinter. Larvae that have not completed development to adults before frost are killed.

Mole Crickets—Mole cricket nymphs develop through the summer and most become adults by fall. However, recent studies in Florida show some egg laying continues throughout the year.

Greenbug—Severe infestations of greenbug have been known to occur as late as the first week of December. Areas having a history of infestation should be reexamined when mild temperatures extend late into the fall. Heavily-infested turf will not survive through winter.

Late fall infestations may be controlled with the same insecticides used to control the pest during the summer. **WT&T**

Put Out Pythium, Fast!

Break Out Terraneb SP.

Terraneb SP Turf Fungicide gives you fast, effective control of pythium without burning your turf.

You'll get proven, consistent performance with Terraneb SP at lower use-rates than competitive products.

With Terraneb SP on hand you know you'll be ready to move fast against fast-spreading pythium.

TIME TESTED
TERRANEB SP TURF FUNGICIDE

For further information write,

KE

KINCAID ENTERPRISES, INC.
P.O. Box 671 Nitro, WV 25143

or see your local distributor.

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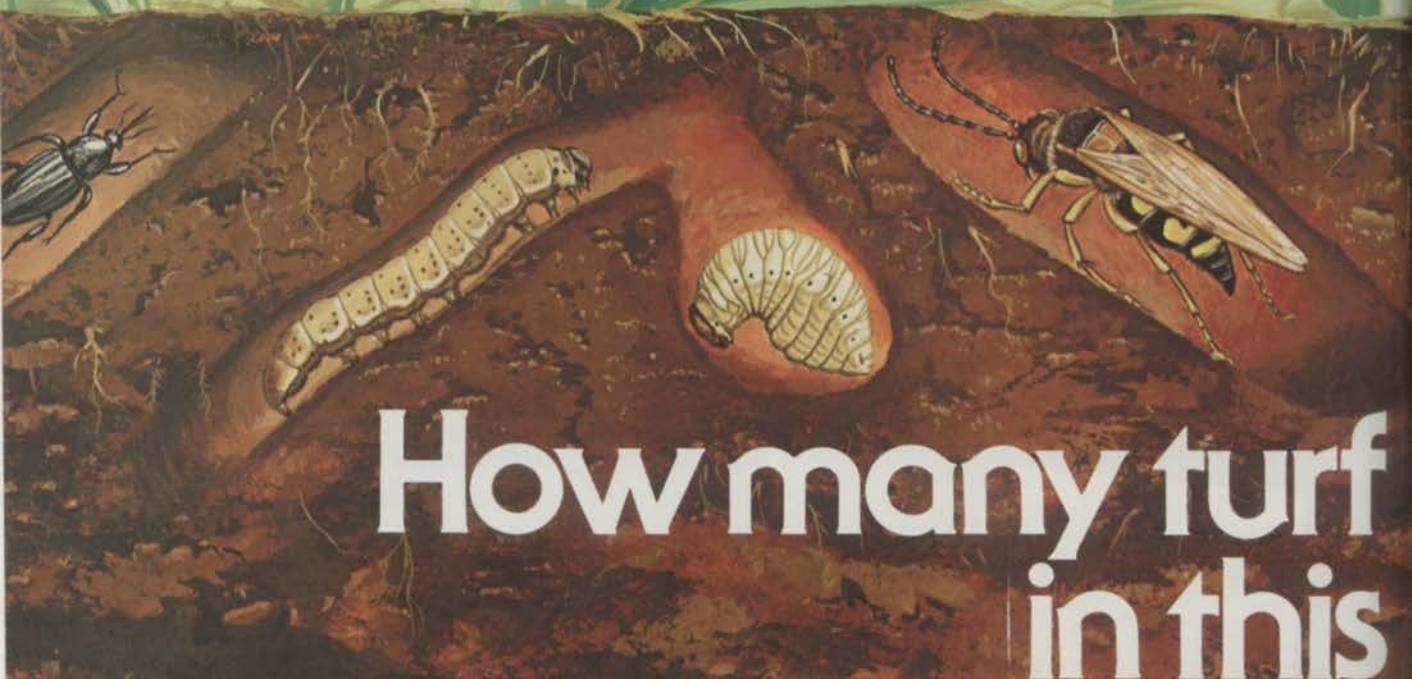


How many turf in this

Here's a clue. D·z·n® Diazinon® controls every insect you see here, from the root-eating white grub to the juice-sucking chinch bug. In fact, D·z·n Diazinon has the biggest label of any turf insecticide. And that makes it the perfect choice for broad spectrum control in both commercial and residential turf.

Need another clue? D·z·n controls damaging worms including

© 1982 Ciba-Geigy Corporation.

Circle No. 264 on Reader Inquiry Card

insects are hiding picture?

cutworms, sod webworms and armyworms. Plus it takes care of nuisance pests like ants, fleas and chiggers.

We've mentioned 8 species on the label but that's not even half.

Keep counting. And when you place your next insecticide order, ask your supplier for the biggest label in the business—D·z·n Diazinon.

PS: You'll find the answer below.

CIBA–GEIGY

Answer: D·z·n Diazinon controls all twenty-three insects seen here.

LANDSCAPE

by Dr. R.E. Partyka

Norway maple aphids.

Insect damage to woody ornamentals can vary from insignificant to widespread destruction that eventually results in death.

There are many ornamental plants, each with an assortment of insects attacking it. This results in a relatively large number of insect pests that can be destructive to ornamentals. Fortunately, all of these insect pests do not appear at one time or in one year, since many of them are cyclic.

Insect control is dependent on early recognition of the specific insect, its significance in the area, its life cycle or biology, a practical approach to control if needed, and materials to use on the pest and their effect on the environment.

Insect damage may be severe during one season and not others. You might consider what will happen in the future if nothing is done? How does the client view

Move It!

Vermeer Tree Spades

Powerful, hydraulically-controlled, tree-moving machines that transplant and package trees/shrubs . . . in minutes!

- 2-8" diameter trees
- One man operation
- Short tower design for greater access
- Fully curved steel spade

Circle No. 160

Package It!

Vermeer TS-32 Tree Spade

Designed specifically for tree packaging operations. Simple three-spade system forms neat, clean "tree package" for easy handling/burlaping/balling.

- Adapts to both loader and tractor (with Cat. II, 3-pt. hitch)
- Short tower design with powerful chain reduction drive system.

Circle No. 161

Grind It!

Vermeer Handle-Bar Stump Cutters

Finest, self-propelled handle-bar unit in the field. Outstanding leverage and control! Cuts out stumps . . . up to 30" wide, down to 8" deep, without repositioning.

- Compact. Squeezes thru ordinary yard gate.
- Rugged 18 hp engine.
- Easy to operate . . . to maneuver . . . to transport.

Circle No. 162

Cut It!

Vermeer Stump Cutters

Fastest, most cost-efficient, most effective way to remove dangerous, ugly tree stumps! Hydraulically cuts 'em out in minutes.

- Simple one-man operation.
- Easy to maintain.
- Four different sizes . . . from economical, self-propelled handle bar-style models to powerful commercial units.

Circle No. 163

Chip It!

Vermeer 1600 Brush Chipper

Toughest, most powerful brush chipper on the street today. Built for high production volume with solid, heavy-duty construction throughout.

- Instant Feed stop. Cuts off access to rotor in .5 of a second.
- Convenient sales and service centers all over North America

Circle No. 164

the pest problem? Are holes or webbing so obnoxious that a high degree of control is needed?

A late season defoliator may be annoying, but it does little harm to a plant that is essentially shutting down for the season. But, if this annoys the person who owns the plant, then appropriate suppressive measures must be applied at the proper time.

An early season defoliator may result in foliar devastation, but new leaves will form and mid- to late-season appearance will approach that of undamaged plants.

Continued defoliation each year may be harmful to the plant and results in a second onslaught of problems at some later date.

DORMANT PERIOD

The winter is an ideal time to control insects that survive from season to season in the egg stage or an immature form. These insects can be smothered by dormant oil sprays. Dormant, or superior oils, exclude oxygen from the insect while not harming most plants.

Some thin-barked trees are sensitive to oil and should not be sprayed; including birch, beech, hickory, and walnut. Oils will not control eggs laid in large masses that are protected by layers of hair, wax, or other material.

Scales

Most scale insects are effectively controlled by a combination of dormant oil sprays and application of insecticide during the crawler stage later in the year.

Armored Scales—This class of scales includes oyster shell scale, cottony maple scale, obscure scale on oak, pine needle scale, euonymus scale, white peach scale, San Jose scale, European elm scale, camellia scale and juniper scale. These insects may have more than one generation or overlapping generations, depending upon the region of the country.

Lecanium Scales—Control of these unarmored scales is more difficult than armored scales. Dormant oil spraying is considered secondary to control of the crawler stage later in the year with materials such as Orthene® (acephate), Turcam® (bendiocarb), Diazinon®, malathion, and dimethoate. This group of scales includes Fletcher scale, European Lecanium, magnolia scale, tulip tree scale, globous scale on prunus species, and wax scale on euonymus.

Eggs, single or single layer

Eggs deposited individually or in single layers are effectively suppressed with superior oils. In-

Pump It!

Vermeer DP-24 Pump

20,000 gpm!* Huge capacity, tractor-powered drainage pump with 24" discharge designed for flood control near dikes/levees.

- Highly mobile. Trailer-mounted.
- Attaches to PTO of tractor.
- 24" diameter tubing available in 100 ft. lengths.

*rated at 100 hp.

Circle No. 165

Plow It!

Vermeer LM-35 Plow

Buries cable at speeds up to 235 fpm without tearing up finished surfaces. Or, turn it around and trench up to 5" wide, down to 3 ft. deep.

- 35 hp Deutz diesel engine.
- Hydraulic steering and propel.
- Just 35½" wide.

Circle No. 166

Trench It!

Vermeer V-440 Trencher

Rugged, rigid-frame, 4-wheel drive trencher. Outstanding digging torque. Most powerful trencher boom in its class. Compact. Streamlined. Built to handle a heavy diet of work.

- Digging capacities: 6-12 inches wide, down to 60 inches deep.
- Vibratory plow, backhoe, dozer blade, reel carrier

Circle No. 167

Win It! $5000

Visit your nearby Vermeer dealer and sign up today!

That's right! Win $5,000 cash in the Vermeer "New Generation" sweepstakes contest going on right now!*

How do you sign up?

Just stop in and register at your nearest Vermeer dealership before July 15, 1984. Absolutely no obligation. Winners will be announced on July 30, 1984. Discover the "New Generation" of Vermeer equipment and be a winner. Sign up today.

*Void where prohibited by law.

Call toll-free 1-(800)-247-2347*

Vermeer

8805 New Sharon Road ● Pella, Iowa 50219

A New Generation

sects in this category are fall canker worm, aphids, spider mites, and eriophyid mites (causing ash flower gall, maple bladder gall, pear leaf blister, and arbovitae tip dwarf).

Eggs in masses

Control of insects in this category is difficult with superior oils. Control later in the year of the larval stage is more effective. Insects in this category include spring canker worm, gypsy moth, eastern tent caterpillar, and tussock moth.

Woody Galls

Immature forms of these insects are located near the base of needles and not in the galls during winter. Thorough coverage by superior oil gives a degree of control. Applications of Sevin®, malathion or Dursban® just prior to bud break may aid in control. Insects in this category include Eastern Gall, Cooley Gall, Horned Oak Gall, Oak Flower Gall and other galls. When using oils, watch for needle color shift to prevent overapplication or sensitivity.

Bark Dwellers

Pine bark aphids, wooly aphids, and mealy bugs overwinter on the bark of woody stems. Pine bark aphids are found mainly on white pine and wooly aphids on apple and pear. Mealy bugs are common on taxus. High pressure sprays with superior oil will help reduce severe populations, but additional insecticides are needed later for best results.

SPRING

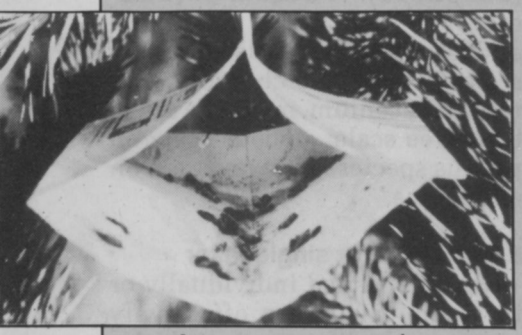
Tender succulent foliage provides an ideal food source for certain insects that hatch with the first warm weather of spring. These spring feeders, when present in large numbers, can cause severe defoliation in a matter of days.

The young stages are often unnoticed because of minimal feeding. With warmer spring weather, they begin feeding ravenously on young, tender foliage. At this stage it is almost impossible to obtain control because the mass of insects requires such a large volume of pesticide. Often, one cannot treat plants fast enough to obtain control.

Foliage Feeders

Eastern Tent Caterpillar—Early development of the destructive stage takes place at bud break on wild cherry, apples, and crabapples. Webbing indicates problem

Pheromone traps are indicators, not total controls



Pheromone traps *make an insect look for you instead of you looking for it.*

The American homeowner often goes to great lengths to avoid getting professional help. Back yards across the country have a blue cast at night from millions of insect electrocutors hung on posts or tree limbs. What would a barbeque be without the crackling sound of insects flying into electrocutors?

Another method of 'stumping the pros' is collecting bags and bags of bugs in traps hung from little L-shaped posts stuck in the lawn. During the Japanese beetle summer invasion, homeowners empty the bags in their traps every night. But, what have they gained?

The trap is the result of research on pheromones, natural odors which can now be produced synthetically. Pheromones are specific to insects, i.e. what attracts a Jap beetle won't attract a tussock moth. Pheromones are used to confuse mating as well as to attract certain insects. "Gypsy moths have been tracked following a pheromone scent for up to 100 yards," says USDA Forest Service Researcher Dr. Lonnie Sower.

"Trapping-out, or using the pheromone to attract pests to a lethal trap, generally has a cost efficiency problem...because the compounds are expensive to produce. Male insects can also become habituated to the synthetic compound and no longer react to it," says Sower.

The advantages of pheromone traps are; they are species specific so non-target insects are not harmed, they let you know exactly when a certain insect is present so that control measures can be implemented or withheld, and research indicates pheromones are harmless to humans.

Control is possible with pheromones says Sower, but cost is related to the actual cost of pest damage. Up to 80 percent control was achieved in forest studies with aerial application of pheromones for tussock moth.

Still, their main use is for monitoring insect populations so pesticides can be used if needed at the right time. □

What's your professional I.Q.?

Grab a pen and take this quick quiz of your professional knowledge.

1. You're faced with a variety of insect problems in the same location. Sod webworms are attacking turf. Beetles are destroying flower beds. And tent caterpillars are defoliating trees. What should you do?
a. Use three pest-specific insecticides, making sure to clean your spray tank between applications;
b. Spray a pesticide specifically formulated for tent caterpillars and hope it controls the other insects, too;
c. Apply a broad-spectrum insecticide that's labeled to control these and more than 210 other problem pests.

2. A wooded lot is being attacked by elm leaf beetles. But this area is also home for several species of birds and other wildlife. What's your best course of action?
a. Use a highly toxic chemical, but exercise caution when spraying;
b. Refrain from spraying and hope the defoliation is minimal;
c. Spray a selective insecticide that's highly toxic to target pests, yet registered for insect control on pests, poultry and even game birds.

3. During hot summer weather, your employees don't like to wear bulky safety equipment while applying insecticides. What can you do?
a. Demand that they wear respirators and other protective gear, even if it is uncomfortable;
b. Allow them to apply highly toxic chemicals without these safeguards;
c. Use an effective insecticide that can be applied without special protective clothing.

4. It's late summer, and fall webworms have become a serious problem. But in the area you're spraying are some sensitive flowers and shrubs. How would you handle this situation?
a. Use an insecticide labeled for use on trees, hoping that any run-off does not injure the flowers and shrubs;
b. Take time to cover the flowers and shrubs with plastic sheeting, then proceed with your spraying;
c. Apply an insecticide that's broadly registered and phytotoxic to only three types of plants (Boston ivy, Virginia creeper and Maidenhair fern).

5. It's the peak of the insect season and you have to protect a wide variety of trees, turf, shrubs, ornamentals and flowers from damage. But how can you control insects on all these plants?
a. Use several different insecticides, each formulated for specific plants;
b. Treat everything with a tree and shrub spray, hoping that this product does an adequate job on turf, flowers and other plants;

c. Select an insecticide that's broadly registered for use on most types of trees, turf, ornamentals, shrubs and flowers.

6. You're scheduled to spray for Japanese beetles today, but there's a problem. A church gathering will be held near the spray site. What can you do to minimize offensive odor?
a. Proceed with the spraying and hope the odor of your insecticide dissipates before the church function begins;
b. Postpone your application until later in the week and run the risk of further insect damage;
c. Use an insecticide that's virtually odorless, but also highly effective against Japanese beetles and other damaging pests.

7. As a grounds maintenance professional, you have access to a number of different insecticides. But what criteria should you use in selecting these products?
a. Use agricultural insecticides, since these chemicals are formulated for large-volume users;
b. Opt for home and garden products, since many of the pests you encounter are also found in residential areas;
c. Choose a compound that was developed and labeled for use by grounds maintenance professionals.

8. Due to a warm, wet winter, infestations of several insect species are expected to be severe. How can you control all these pests and inventory costs, too?
a. Stock several pest-specific insecticides;
b. Wait until an outbreak occurs to order your insecticide;
c. Make sure you have a broad-spectrum insecticide on hand to handle most of your pest problems.

As a grounds maintenance professional, many factors affect your choice of pesticides. Broad-spectrum insect control. Environmental protection. Your workers' safety. Phytotoxicity of pesticides to various plants. The offensive odor of many chemicals. Versatility of the products you buy. How an insecticide answers your specific needs. And the high cost of inventory.

These important factors make "C" the right answer to all eight questions. And all these features make SEVIN carbaryl insecticide the right answer to your insect problems.

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all means—and fairways, too. With its lasting residual action, it provides the most cost effective control for summer diseases.

BAYLETON works so well for so long because it gives you systemic activity through both foliar and root uptake. Use recommended rates and follow label directions.

BAYLETON Turf fungicide. It can prevent your turf's green beauty from turning into brown ugly. See your turf chemicals distributor.

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Circle No. 138 on Reader Inquiry Card

Four life stages *of the black vine weevil(left to right); egg, larva, pupa, adult.*

Bronze birch borer *and D-shaped emergence hole.*

Cottony maple scales *are found most easily before trees leaf out.*

areas. Apply Orthene®, Bt, Sevin®, malathion, methoxychlor, Dylox®, or dymet for control. One generation per year.

Forest Tent Caterpillar—Similar to eastern tent caterpillar but forms a silken mat on trunks and branches instead of webs. Same control as eastern tent caterpillar.

Spring Canker Worm—Eggs are deposited in the spring. Crawler has two prolegs, as compared with three prolegs of fall canker worm. Apply Bt, Sevin®, methoxychlor, Orthene®, or dymet. One generation per year.

Fall Canker Worm—Eggs deposited the previous fall. Three prolegs. Control same as spring canker worm.

Gypsy Moth—Voracious feeder on many plants, especially oak. Heavy population in Northeast with scattered outbreaks elsewhere. White egg masses on trees and buildings during winter provide clue to presence. Apply Sevin®, Bt, methoxychlor, or Orthene® over large area. One generation per year.

Tussock Moth—General feeders of trees and shrubs. White tufts of hair are common marking. Western tussock moth is a problem in mountain states. White marked may have several generations per year. Most materials listed for foliage feeders are effective.

Yellow-Necked Caterpillar—Yellow and black striped caterpillar with prominent yellow spot just behind head. Feed in groups and raise head and tip of abdomen when disturbed. Apply Sevin® or Orthene®. One generation.

Juniper Web Worm—Reddish-brown caterpillar overwinters in frass on branches. May cause severe damage before recognized. Penetrating sprays of Orthene®, Diazinon®, Sevin®, or dymet early in the spring or early fall needed for control. One generation.

Green Stripe Maple Worm—Limited insect on maple in river bottoms, but a major defoliator when present. Two generations, the second is most damaging. Apply Sevin®, Orthene®, methoxychlor, dymet.

Elm Leaf Beetle—Larvae feed on the lower leaf surface causing

them to die and drop prematurely. More than one generation. Apply Sevin®, methoxychlor, dymet, and Orthene® for control.

Sawflies and Leaf Miners

European—Eggs are deposited in needles in late fall. Look for symptoms on needles to determine potential problem. Use Orthene®, methoxychlor, Sevin® in early stages. Other conifer sawflies develop during the summer.

Birch Leaf Miner—Small black fly-like wasp present when leaves are half grown, signifies time to apply a corrective control. Use Sevin®, Diazinon®, Orthene®, or dimethoate.

Arbovitae Leaf Miner—Small green caterpillar with black head that overwinters in mined leaves. Look for holes in terminal tissue. Adults are small moths. One generation. Direct sprays in spring of Orthene®.

Locust Leaf Miner—Many plants skeletonized by adults. Mining occurs on black locust. Two generations. Limited materials for control. Lindane and Dibrom® are listed.

Other Sawflies—Skeletonized foliage or consumed foliage. Need to watch for damage as insects are sporadic. Most materials listed will give good control.

Sucking Insects

Aphids—Often present on new growth. Use malathion, Diazinon®, dymet, Orthene®, and Turcam®. Orthene and Turcam have longer residual but new generations build quickly. Need to watch closely.

Spider Mites—Common on evergreens. Need to watch for off-color foliage. Spruce spider mite may be a problem at this time. As weather warms, two spotted spider mite becomes common. Apply Kelthane®, malathion, Vendex®, or dymet.

Plant Bugs and Leaf Hoppers—Common on honey locust as new growth unfolds. Sevin®, dymet, Diazinon®.

Lace Bugs—Found on hackberry, oak, mountain ash, sycamore, elm, and azalea. Wings appear lace-like with many veins. Can cause considerable leaf browning. Several generations. When severe, use malathion, Sevin®, Turcam®, dymet, or methoxychlor.

Borers

Clear Wing—Early season emergent holes. Use pheromone traps to detect activity. Protect new wood with Dursban® or lindane.

Bronze Birch Borer—Severely damages white birch. Plant vigor is a factor, but protection possible with Turcam® or lindane. Timely application needed.

Flat Head and Round Head—Enter wounded or weakened plant tissue. Little to no control once tissue is invaded. Plant vigor is major deterent.

Scale

Crawlers—The early crawler stages of euonymus, oyster shell, oak kermes, golden oak and pine needle scale can be active at this time. Watch plants carefully for activity. Apply Orthene®, Sevin®, Diazinon®, or malathion. Multiple generations.

Shoot and Tip Moths

Pine Tip and Mugo Pine Tip—Several species of shoot and tip moths need to be treated at this time. Timing important. Several materials suggested, including Sevin®, Orthene®, dymet, lindane, Turcam®, and dimethoate.

SUMMER INSECTS

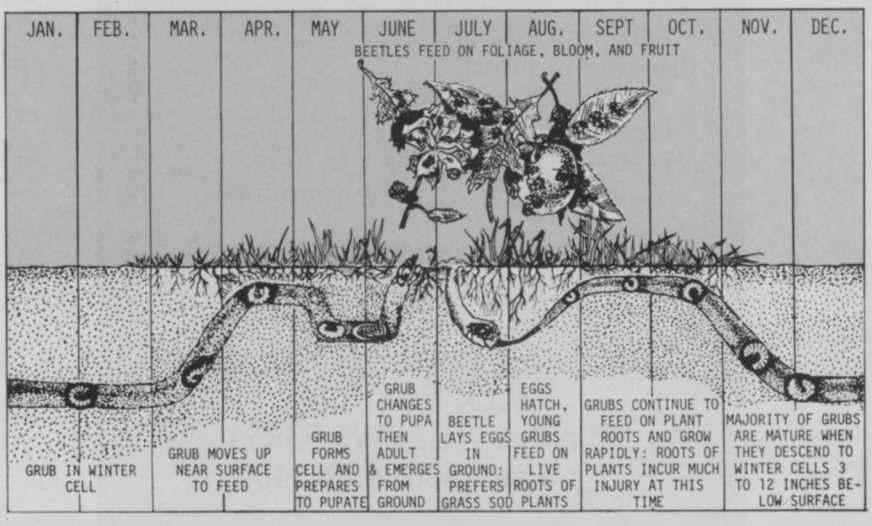
These insects feed on mature or near mature foliage. Injury at this time may reduce the amount of sugar or carbohydrates the plant can store for bud development and winter survival in colder areas of the country. Weakened plants are more susceptible to various stresses.

Foliage Feeders

Bag Worms—Most common on narrow-leaf evergreens, but found on many other plants when population levels rise. Reasonable control can be obtained with Sevin®, Diazinon®, Orthene®, malathion, methoxychlor, and Turcam® when insects are small. Dursban® and Orthene® are more effective against mature insects.

Japanese Beetles—Early to mid-summer favors the first emergence of this colorful but destructive flying beetle. Favored hosts are prunus, apple, rose, elm, and many other plants need to be protected with Sevin®, Turcam®, methoxychlor or Diazinon®. Long residual is important.

Black Vine Weevil—Leaf notching on taxus, azalea, rhodo-



Japanese beetle life cycle *shows control with soil insecticides has the best chance of working in late April through October.*

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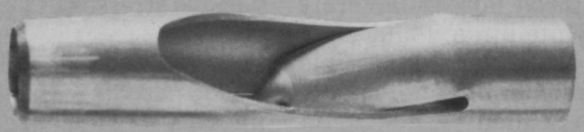

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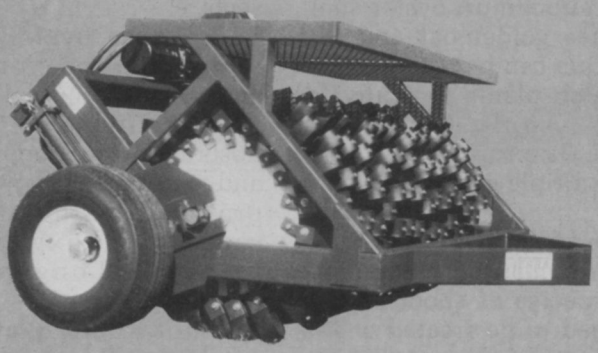

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dendron and numerous other plants in the landscape suggests weevil feeding. Black vine weevil is a night feeder. Larvae feed on roots. Control adults with Orthene®, Turcam® or lindane.

Imported Willow Leaf Beetle—Most willows attacked by this insect. Several generations. Apply Sevin®, Orthene®, methoxychlor. Timing is important.

Sucking Insects

Lace Bugs—Off color and stipple-pattern on leaves is common with shiny black fecal residue on underside of leaf. Common on azalea, rhododendron, sycamore, and pyracantha. Use malathion, Orthene®, Sevin®, dymet, or dimethoate.

Spider Mites—Hot weather will favor the buildup of these insects often found on juniper and spruce. Many regular insecticides give little to no control of spider mites. Other materials must be used such as Dicofol, dymet, or Vendex.

Aphids—Different species are present during the growing season. Must be alert to buildup, especially on new succulent tissue. Use Orthene®, Diazinon®, or malathion.

White Flies—Often found on the undersides of leaves of azalea, privet and foundation plants. Black sooty mold grows on the honey dew produced by the flies. Difficult to control insect due to life cycle. Apply Orthene®, dymet, Diazinon®, dimethoate, plus others.

Scale, Crawlers

Cottony Maple Scale—Cottony masses on silver maple and others. Wait for all eggs to hatch for best control. Use Orthene®, Diazinon®, Sevin®, or malathion.

Lecanium Scale—Wait for crawler stages to be active for control. Timing important. Use materials for scale listed above.

Oyster Shell Scale—Watch for branch dieback or slow leaf development.

MID-SUMMER, EARLY FALL

Chewing insects that feed on foliage at this time of the year are often more unsightly than harmful to the plants. However, if

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the object is to keep foliage for the fall color change, one must be aware of these late-season feeders.

Life cycles of certain insects also dictates that control measures be employed at this time for optimum results and satisfied clients.

Scale Insects

Magnolia Scale—The crawler stage of this scale is active in the latter part of the growing season. Use Sevin®, Diazinon®, malathion, or Orthene® on the crawler stage.

Pine Needle Scale—Second generations of this insect that can blow in or be carried by other insects and birds, or were missed by earlier treatments, can explode and nullify all previous efforts. Use Sevin®, Diazinon®, dymet, or Orthene® on the crawler stage.

Fletcher Scale—Watch for crawler stage at this time of year on prone plants and use Sevin®, malathion®, or Orthene®.

Adelgids

Cooley Gall—This adelgid leaves the gall in late summer to start as new life cycle or may return from fir trees if the alternate host of this pest is in the area. Good coverage of the new growth with Diazinon®, Sevin®, or malathion is important.

Eastern Spruce Gall—Similar in nature to the cooley gall, but activity is later so timing is important for the particular area.

Leaf Feeders

Fall Web Worms—The second generation becomes very obvious at this time of year with extensive webbing of the foliage. Suppression can be obtained with Sevin® or methoxychlor.

Japanese Beetle—This destructive flying beetle keeps feeding on foliage into the fall. Weather conditions play an important role in its numbers. Control with Sevin® or methoxychlor will be dependent on local analysis.

Mimosa Web Worm—Webbing similar to fall web worm where leaves are pulled together. Several generations. Apply Sevin®, Orthene®, Diazinon®.

Oak Leaf Skeletonizer—Second generation on oak. See controls under spring section.

Borers

Locust Borer—A problem on black locust. Emergence occurs in the fall and egg laying is when golden rod is in bloom. Lindane as a trunk protectant can be used where a problem exists.

Peach Tree Borer—Mid- to late-summer treatment may be necessary on valuable plants. Use Dursban® or lindane. WT&T

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*Suggested retail price.

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DIRECTORY

Insecticide Directory

Common Name	Brand Name	Company	Circle No.
acephate	Orthene	Ortho/Chevron	250
aspon	Aspon	Stauffer	251
Bt	Thuricide Dipel SOK Bt	Sandoz Abbott Labs Tuco/Upjohn	252 253 254
bendiocarb	Turcam	Nor-Am	255
carbaryl	Sevin	Union Carbide	256
chlorpyrifos	Dursban	Dow	257
diazinon	Diazinon Sarolex	Ciba Geigy	258
dicofol	Kelthane	Rohm and Haas	259
dicrotophos	Bidrin	Shell	260
dimethoate	Cygon	American Cyanamid	261
dinocap	Karathane	Rohm and Haas	262
dioxathion	Deltic	Nor-Am	263
dymet	Dymet	Mallinckrodt	264
ethoprop	Mocap Nematicide/ Insecticide	Rhone Poulenc O.M. Scott	265 266
fenamiphos	Nemacur	Mobay	267
fenobutatin-oxide	Vendex	Shell	268
fenvalarate	Pydrin	Shell	269
isofenphos	Oftanol	Mobay	270
malathion	Malathion	American Cyanamid	271
methiocarb	Mesurol	Mobay	272
methomyl	Nudrin Lannate	Shell Du Pont	273 274
methoxychlor	Marlate	Kincaid	275
naled	Dibrom	Chevron	276
oxydemeton-methyl	Metasystox	Mobay	277
oxythioquinox	Morestan	Mobay	278
phosmet	Imidan	Stauffer	279
propoxur	Baygon	Mobay	280
trichlorfon	Dylox Proxol	MoBay TUCO/Upjohn	281 282

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West Newton, MA 02165, 617/244-7900

Conaway, Inc. (MD, Northern VA & Washington D.C.)
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Conaway, Inc. (Western PA)
Lawrence, PA 15055, 412/341-6447

EDM Distributors, Inc. (CT, VT & Western MA)
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S. P. Lummus Supply Co. (Eastern PA)
Pottstown, PA 19464, 215/327-4920

Ross Lawn Equipment (Upstate NY)
Tonawanda, NY 14150, 716/691-7642

Steven Willand, Inc. (NJ, NY & LI)
Fairfield, NJ 07006, 201/227-5656

SOUTH

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Chemical & Turf Specialty Co., Inc. (TX & OK)
Garland, TX 75041, 214/271-4549

Florida Outdoor Equipment, Inc. (FL)
Orlando, FL 32804, 305/295-5010

Hudson Small Engine Sales (AL)
Huntsville, AL 35800, 205/536-9637

Lawn Care Sales & Service (TN)
La Vergne, TN 37086, 615/793-6052

South Central Turf Equipment (MS & LA)
Jackson, MS 39209, 601/922-7437

Spain Distributing Co. (Western NC & Western SC)
Charlotte, NC 28210, 704/552-9582

Stovall & Company, Inc. (GA)
Atlanta, GA 30318, 404/352-1555

MIDWEST

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Louisville, KY 40207, 502/895-8687

Conniff's Power Equipment, Inc. (IN & Southern OH)
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General Turf & Grounds Equipment Co. (MO)
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Grass Roots Turf Equipment Co. (Iowa)
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Circle No. 255 on Reader Inquiry Card

Earl Crane, 50 Years of Equipment

by George L. Zeis

Crane combines product lines, *like this Steiner tractor and Dedoes drum aerator, to provide his customers with efficient equipment. Crane (left) shows customer the hydraulic lift system of the tractor.*

It is 7:00 in the morning and Earl J. Crane is already at his desk working. This is not too unusual for a golf course superintendent or landscape contractor, but Earl is 78-years-old and a manufacturer's representative for Dedoes, Buckner, Lawn Genie, Deines, Roseman, Locke, and Steiner in Tiffin, OH, a small farming community south of Toledo.

Crane sold his first turf product, a Locke Tri-Plex reel mower, in the 1930's in the Detroit area. Orphaned at the age of three, Crane learned early that selling was his ticket to success.

While attending a turf field day in Michigan in the late 30's, Crane met H.M. Cooper, developer of the first self-propelled reel mower, and took on the Cooper Champion Greens mower. In those days, it cost $295 and weighed 120 pounds. Crane sold 3,000 Cooper mowers to Firestone in 1940 for its dealer network. Things looked rosy for turf equipment markets.

After a stint in the Army, Crane responded to an urge to get into the golf course business and bought Chippewa Golf Course, near Toledo. He and his partner paid $52,000 for the 177-acres, to be paid off over 20 years. "After working our tails off for three years, we sold the place," Crane said thankfully. The land today, Crane estimates, would be worth more than $3 million.

While part owner and superintendent of Chippewa Golf Course, Crane began to compare equipment. He became especially interested in turf aerators. "The Terferator, developed in the 20's, drilled holes in the ground. Only a few greens could be done per day, compared to today's equipment which can do 18 greens in less than four hours," Crane observes.

"Aeration of golf courses before World War II was a luxury. Golf course maintenance didn't really become a must until President Dwight Eisenhower popularized the sport."

Crane's interest in aerators grew when he met Arnold Dedoes in 1969. "My brother-in-law in Michigan had used a Dedoes and spoke highly of it. I decided to try to add the line to other turf products I sold." Arnold Dedoes reluctantly provided Crane with a demonstration model which he quickly sold to the Cleveland Country Club. Today, Crane supervises 40 U.S. Dedoes dealers and 16 other dealers outside the country.

Crane notes that up to now, golf courses have been the big market for aerators. "But," he said, "we are now going after lawn care companies, industrial parks, and even the homeowner."

Crane travels more than 60,000 miles each year visiting dealers, giving demonstrations, and servicing customers. "A good demonstration is a very convincing sales tool," he adds.

One of Crane's specialties is combining products from various equipment lines to provide the turf manager with more flexibility. One recent example is his combination of a Steiner center-pivot, four-wheel-drive tractor with Dedoes drum aerators. The speed and maneuverability of the small tractor speeds up aerating of large, curved turf areas.

Crane tried to retire in 1971 to Arizona at the normal age of 65. After four years of observing the person managing his business, he decided to get reinvolved and hasn't let up since. "I'm taking it day by day, month by month," Crane cheerfully answers. "But one thing is for sure, I'm going to keep busy. It keeps a fellow young." **WT&T**

New Du Pont Landscape Fabric. It lets water through to give you healthier beds with less work.

New DuPont Landscape Fabric lets water pass through, reduces wash-away of mulch while it impedes weed growth. So you get healthier, more attractive plant beds with less maintenance work and cost.

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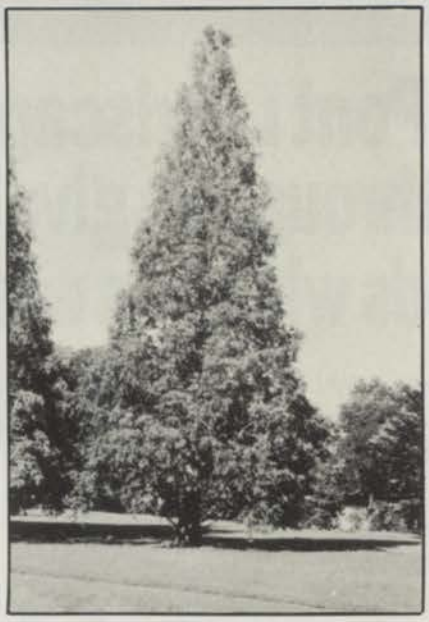
Circle No. 113 on Reader Inquiry Card

Dawn redwood and baldcypress

by **Michael A. Dirr**, Associate Professor, Horticulture, The University of Georgia, Athens



Baldcypress and dawn redwood *appear very similar from a distance, but have certain distinct differences. Baldcypress in the color photo and dawn redwood is the black and white photo.*

The purpose of this new monthly mini-section on characteristics of plants is to help landscape managers correctly identify and care for specific plants. It will include tips on diseases, insects, and physiological problems of specific plants of interest to the professional plant manager.

An effort will be made to keep technical jargon to a minimum and emphasize key characteristics used to identify common landscape plants. Often, several closely related species will be presented to reduce confusion.

Most diseases and physiological problems are correctly identified based on the host plant. Scale insects are numerous and rather indistinct. When identified as willow scale, pine scale, or *Euonymous* scale, we can logically and accurately recommend the best control measures.

Leaf spots are another rather ambiguous problem. Almost every plant contracts leaf spots but rarely are they serious. However, if the leaf spot is identified as *Entomosporium* leaf spot or *Photinia x fraseri*, Fraser photina, then it is imperative that control measures are implemented. Identification separates serious from nonserious pests.

This first column will cover two oft-confused trees, *Taxodium distichum*, common baldcypress, and *Metasequoia glyptostroboides*, dawn redwood. Common baldcypress is native to low wet areas from Delaware to Florida and Texas. Dawn redwood was thought extinct until rediscovered in China and introduced to cultivation through the efforts of the Arnold Arboretum in the mid-40's.

Both species have a feathery, conical to pyramidal outline and may assume the appearance of an inverted ice-cream cone. Baldcypress has alternately arranged branches. Dawn redwood branches oppose each other and drop off along with the needles in the fall.

Dawn redwood requires a moist, well-drained acid soil and does not tolerate swampy conditions. Baldcypress is found in swamps in the wild, but makes its best growth in moist, well-drained, acid soils.

Dawn redwood does not appear as susceptible as baldcypress to chlorosis. I have observed horrible chlorosis on baldcypress in the Midwest. Iron capsules implanted in the truck corrected the problem temporarily.

Both have rich green leaves and excellent rusty-red to orange-brown fall color. The bark is reddish-brown and offers winter interest.

In the Midwest, galls caused by a mite may form on baldcypress, but there is considerable variance from tree to tree. These are not serious but are rather unsightly.

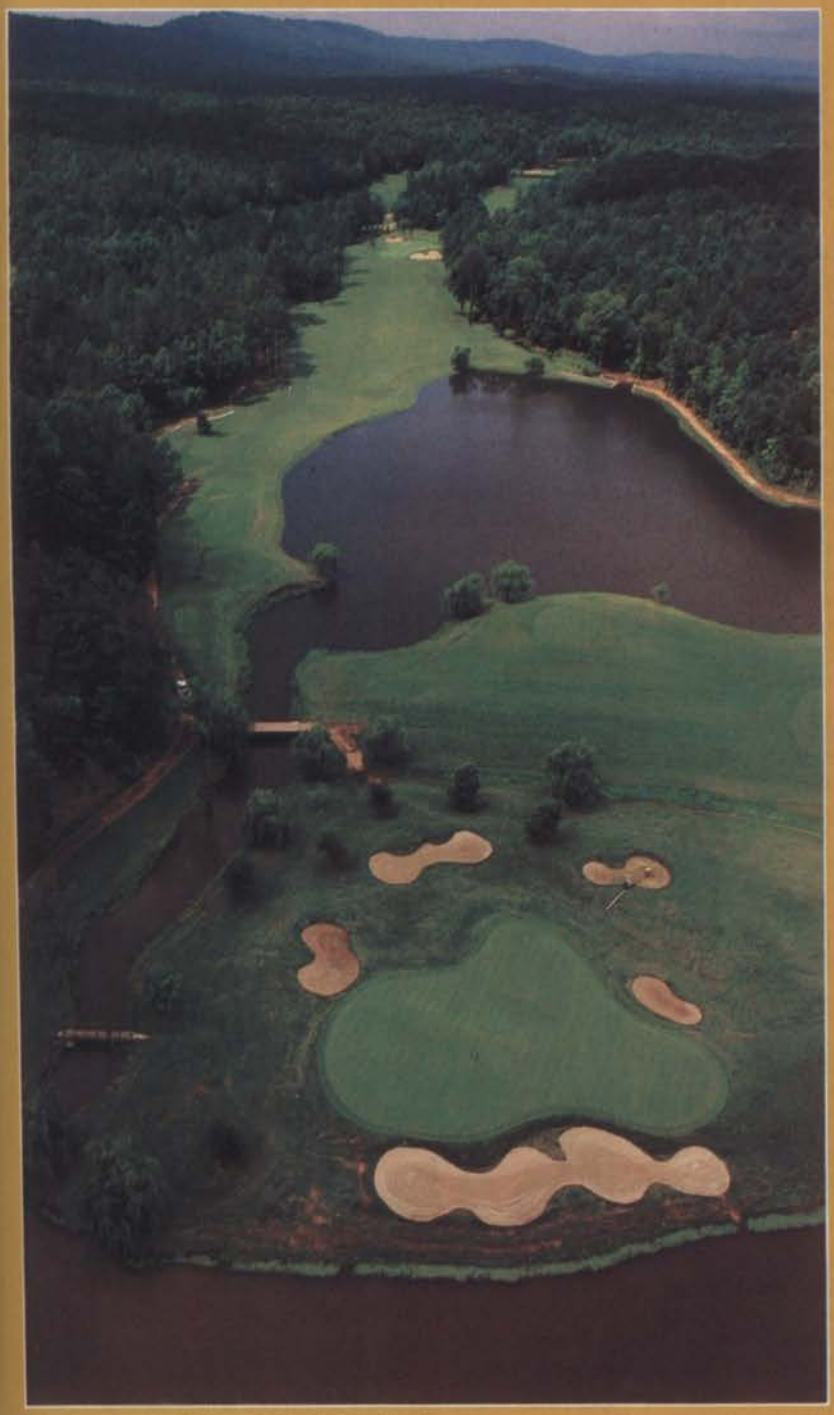
Both species can be grown from Zone 5 to Zone 8, with baldcypress native into Florida (Zone 9). I have seen dawn redwood on the University of Maine campus in a protected courtyard where the top had been killed back. Temperatures may reach -30 degrees F. in Orono, ME. Baldcypress is slightly more cold tolerant and also more heat tolerant.

Interestingly, 'knees' are not produced on baldcypress unless they are located in or near water. I have never observed knees under normal landscape conditions.

Pond cypress, *Taxodium ascendens* is similar to baldcypress. The primary difference is the needles of pond cypress are more flattened and point toward the end of the stem.

WT&T

1984 PGA putts on PENNCROSS



18th green at Shoal Creek, Shoal Creek, Alabama

Shoal Creek, Alabama

At the rugged Shoal Creek course, host of the 1984 PGA Championship August 16-19, 1984, the touring professionals will again be putting on Penncross creeping bentgrass. Penncross and Penneagle, the Penn Pals, are no strangers to the pros. Most of the recent major championships have been played on one or the other. The Western open at Butler was played on Penneagle fairways and greens. The 1983 US Open at Oakmont was played on Penneagle tees, fairways and greens. Maybe you saw the sixty-foot putt on Penneagle.

So, when the Shoal Creek course was designed, it's no wonder Penncross was specified for the putting surface. It was a 'natural' to choose Penncross bentgrass, with its glorious history, for a course with a sparkling future!

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Circle No. 153 on Reader Inquiry Card

PROBLEM SOLVERS

by **Balakrishna Rao,** Ph.D and **Thomas Mog,** Ph.D

Preemergents questioned

Problem: *Last fall we seeded a number of lawns with a Kentucky bluegrass, fine fescue and ryegrass mixture using an aeroseeder. Now we are concerned with the use of preemergent materials like Betasan for crabgrass in spring. Will it hurt the seedlings? Should I skip or delay the preemergent application? (Wisconsin)*

Solution: If the lawns were seeded early in the fall and the conditions were favorable for germination and proper establishment, then the application should not be harmful. However, if the seeding was done later and/or seedlings did not have a chance to establish, they will be susceptible to injury from the application.

If the seedlings have not established and the lawns have a potential for crabgrass infestation, instead of skipping, you should delay the application for two to three mowing periods or consider using Tupersan, a safer preemergent material. Although expensive, Tupersan can be safely applied onto seedlings, even during the establishment period.

If you are going to delay the application, you should monitor the soil temperature. Crabgrass seeds germinate when the soil temperature reaches about 55 degrees Fahrenheit. You can also monitor indicator plants like forsythia for its petal fall stage which coincides with the crabgrass germination. Based on our experience in the Wisconsin area, the preemergent materials should be applied no later than mid-May to get adequate crabgrass control.

Mowing frost-covered grass

Problem: *What is the major problem and solution for mowing cool-season grasses covered with early morning frost? (Arizona)*

Solution: Mowing frost-covered turfgrass will result in the crushing of brittle plant cells. Leaves which are damaged will be replaced as new leaves emerge from the turfgrass crown. The best solution is to mow after the frost has melted or lightly syringe with water to speed up melting.

Biological control for chinch bugs

Problem: *Is it true that there is a biological control fungus which kills chinch bugs in the lawn? Can we purchase it like milky spore? Would you please mention the source where it can be purchased and also give your comments. (Missouri)*

Solution: Yes, there is a fungal species know as Beauveria spp which can infest and kill chinch bugs at any stage of development. This biological control agent flourishes well in lawns which are kept moist. Reports also suggest that a well-irrigated lawn will have less chinch bug problems. This is a soil-borne fungus which survives in soil and, under ideal conditions, can infect chinch bugs and kill them. Although these biocontrol agents are present in nature, usually their activity is not sufficient enough to keep the insect population under an acceptable level where severe chinch bug infestation occurs.

I do not know of any sources where the fungal organism is either being produced commercially or can be purchased for lawn care use. During periods of chinch bug activity, maintain adequate soil moisture which will help the fungal growth (if it is present in the soil) as well as turfgrass recovery from injury.

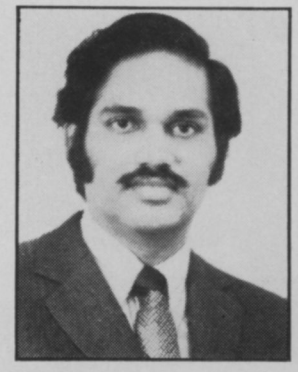
Weed control under tree grates

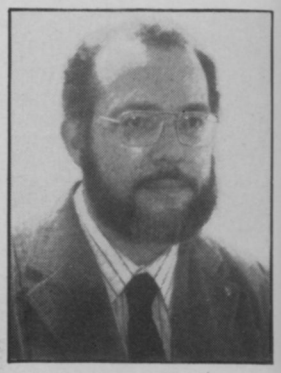
Problem: *We have small linden trees planted within heavy metal grates along walkways. Control of weeds growing through the grates from the planting beds has been a constant problem. Can season-long chemical control be obtained with only one application? (Michigan)*

Solution: Any prolonged use of herbicides near confined tree root systems will be difficult. Foliar distortion may occur with lindens because of some herbicide absorption by the stem of thin-barked trees. The choice of herbicides is limited since lindens are highly sensitive to paraquat and simazine.

An application of Surflan should be made in late April. This will give postemergent control of most broadleaf weeds and preemergent control of many grasses. A follow-up application of Surflan plus Roundup should be made near the end of June to control escapes. Extreme care should be taken to avoid drifting of material on the bark or suckers.

A more permanent type of weed control entails covering the planting bed with perforated black plastic topped with shredded bark mulch. Air and gas exchange will occur and moisture will reach the soil.





Balakrishna Rao is plant pathologist and Thomas Mog is pest management specialist for Davey Tree Expert Co., Kent, OH.

Questions should be mailed to Problem Solver, Weeds Trees & Turf, 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Please allow 2-3 months for an answer to appear in the magazine.

Flexible flyer

Float over fairways, trim around traps with the Jacobsen HF-5

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Float over fairways on big Softrac tires – **just 8 lbs. p.s.i.** ground pressure. You'll get precision mowing with a lot less compaction.

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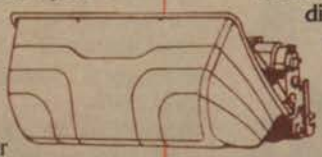

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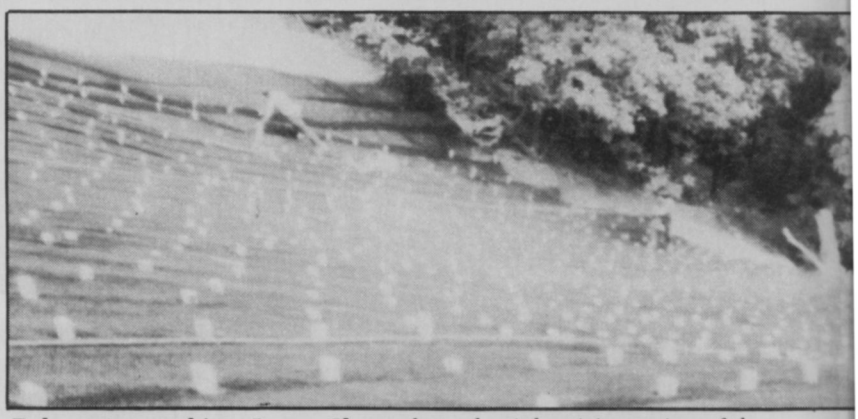
Stopping ocean erosion dead in its tracks

Following years of wind and water erosion courtesy of the Atlantic Ocean, the owners of a high rise condominium decided to halt the loss of soil from the 200-foot slope adjacent to their building.

The slope that overlooks the Sandy Hook Bay in Monmouth County, NJ, is on the highest coastal elevation point along the East Coast. One hundred-fifty feet wide on a 1:1 gradient, the slope was protected by a management program that involved dressing the slope from the top, compacting fill areas, installing slope boards and Enkamat erosion control matting, and seeding and planting its entire length.



Enkamat pegged into Jersey Shore *slows the Atlantic's erosion of the 200-ft. slope.*

Preparation

The slope was so steep that workers had to be "tied off" with safety lines while installing the slope boards that were used to prevent surface shear. After rocks and exposed roots were removed, topsoil was added, raked and compacted with rollers attached to cables that were raised and lowered by draglines.

Next, the crew installed 18,900 square feet of Enkamat 7020 matting, a three-dimensional nylon monofilament structure that leaves 90 percent of its volume open for soil, gravel or other material. The matting was anchored using 1 x 3 x 24-inch rough-cut oak stakes placed on 3-foot centers. Stakes were placed every two feet on the Enkamat seams.

After installing the matting, which took 20 manhours and about 5,000 stakes, the crew planted a grass mixture and multiflora roses on the three-foot centers. Soon the entire slope was covered with vegetation and Mother Nature's handiwork effectively stopped.

SOLO'S JET SET

THE JET SET IS "IN" —
WE WANT YOU IN TOO!

Right now, people all over the country are asking for SOLO quality sprayers, because they are:

INvaluable for agriculture, horticulture, pest control, sanitary and industrial application, or just around the house and campsite.

INdifferent to corrosion - made of high-impact plastic with VITON seals.

INdispensable for applying many cleaning solutions, all approved pest control and agri-chemical formulas, including herbicides.

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Responsible aquatic weed management

Lake Rousseau, Florida: For over ten years, water resource managers at Lake Rousseau have relied on Pennnwalt aquatic herbicides, confident that they will obtain effective control of submersed aquatic weeds without harm to the aquatic environment.

Since 1960, those responsible for aquatic weed management have relied on Pennwalt aquatic herbicides and algicides. All of Pennwalt's aquatic herbicides are based on endothall, and offer these important advantages:

- **Rapidly biodegrade into natural products**
- **No bioaccumulation in the food chain**
- **Will not bind or leave residues in the hydrosoil**
- **No significant movement from the treatment site**
- **Highly effective against algae and most problem submersed aquatic weeds, such as Hydrilla, Milfoil and Pondweeds**

Pennwalt's endothall formulations have a long history of being effective tools in weed management without causing adverse effects on man, other mammals, fish, shellfish or fish food organisms.

To manage your aquatic resources responsibly, you can rely on Pennwalt aquatic herbicides. Contact Pennwalt Corporation, Three Parkway, Philadelphia, PA 19102, (215) 587-7219, for more information.

Pennwalt aquatic herbicides are available in four formulations:

AQUATHOL® K
AQUATIC HERBICIDE
AQUATHOL®
GRANULAR AQUATIC HERBICIDE
HYDROTHOL® 191
AQUATIC ALGICIDE AND HERBICIDE
HYDROTHOL® 191
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Use pesticides effectively. Read and follow label directions.

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Just trim once in the spring. Then spray *once* with Atrinal. (Where the growing season is longer, you may want to spray again in early fall.) Now hang up your pruning shears for the rest of the year.

Atrinal systemic growth regulator inhibits apical bud growth, promoting lateral branching for lusher, fuller plants that keep their shape. Atrinal can also be used to suppress flowering and fruit set of ornamental olives and certain other species. And application is safe and easy.

For more information, write for the Atrinal Landscape Maintenance brochure.

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Atrinal can also be used for nursery and greenhouse crops.

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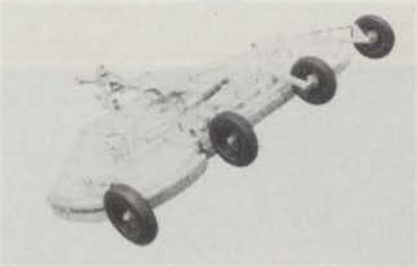
PRODUCTS

Flexwing 215 Cutter handles large tasks

Roadside maintenance, large tracts and stalk shredding are all easily handled with the FMC Corp.'s Flexwing 215, a 15-foot cutter with hydraulic lifts to raise wings for compact trans-

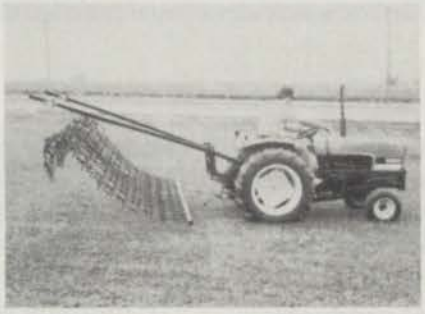


port. Triple spindles on this model provide maximum cutting width with minimum skipping or streaking, and the automatic parallel lift makes hook-ups quick and easy while maintaining proper levels through all height adjustments.

Circle No. 201 on Reader Inquiry Card

Harrow lift provides easy transportation

Fuerst Brothers Inc. has introduced a new harrow lift to easy transporting of the F-l-e-x-i-b-l-e Tine Harrow. The lift attaches to a three-point hitch. In the raised position, it will suspend the

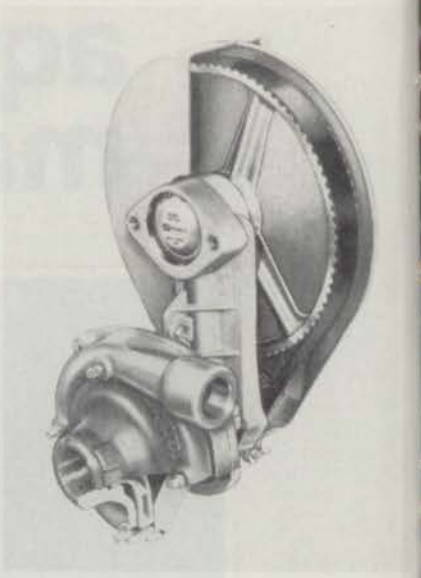


entire harrow from the rear. When the harrow is operating, the lift stays clear. It fits all Fuerst Hercules and Peerless eight, ten, and twelve-foot models.

Circle No. 202 on Reader Inquiry Card

Centrifugal pump has positive drive belt

The Hypro Series 9400 belt-drive centrifugal pump from Hypro Div., Lear Siegler Inc. features a positive drive method of power transmission for no-slip uniform output. Adjustment is simple and belts can be replaced without disturbing the PTO attachment.



The cast-iron pump is epoxy-coated to resist corrosion, and the drive mechanism is protected by a polyethelene shield. Pumps may be PTO mounted or PTO shaft-driven, and deliver either 65 or 80 gpm at 40 psi. The many corrosion-resistant features make this model especially suitable for use with certain herbicides.

Circle No. 203 on Reader Inquiry Card

Two fertilizers control turf insects

Lebanon Chemical Co. has formulated two products to fertilize and provide insect control on various turf areas. Oftanol 1.5 Granular controls both surface and subsurface insects, including grubs. It is granulated for stability in hot-weather applications, has a low solubility, and resists leaching when distributed into the soil. Oftanol is EPA approved, and has little effect on earthworm populations.

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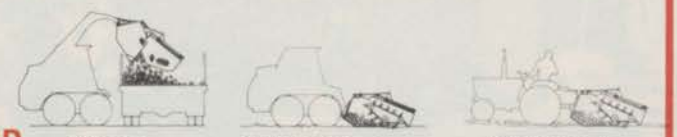
ROCKHOUND TEACHES THE ABC'S OF GROUND PREPARATION

A SERIES ROCKHOUND



Dumping — Skid Steer Mount (Hydraulic) — 3 Point Mount

B SERIES ROCKHOUND

Open bottom—PTO Drive. Rocks are raked to a convenient windrow for later pickup.

COST EFFECTIVE ROCKHOUNDS Rake and collect rocks and surface debris, leaving the soil in a fluffy, level, seed-bed quality condition.

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Scientific Guide To Pest Control Operations

by Dr. L.C. Truman
Dr. G.W. Bennett and
Dr. W.L. Butts

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WTT 54

Quantity rates available upon request.

Please allow 6-3 weeks for delivery

Pro 32-3-8 25 percent SCU + Oftanol 1.5 Granular provides similar control, with the added benefit of fertilization.
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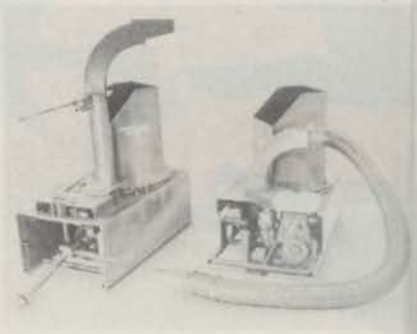
Mulching made simple with Bale Chopper

The Bale Chopper, from Goossen Industries, shreds and blows mulch, straw, paper, leaves, and grass with ease. Mulch or compost can be applied either with a 180-degree directional blower or with a 20-ft., six-inch-diameter flexible hose. The chopper is designed for quick, even coverage of large rows or areas.



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Electronic ignition simplifies starts

The Power-Start electronic ignition module from Power Lawnmower Parts Inc. is said to eliminate the need for troublesome points and condensers on most two and four cycle engines for outdoor power equipment. Modules are designed for long

continued on page 77

The Professional Lawn Care Association of America 1984 Conference & Trade Show November 12-15, Tampa, Florida

PLCAA '84 Tampa

NOVEMBER 12-15

MORE IN 84! Mark your calendar. It's not too early to start planning for the lawn care industry's biggest week of the year — the Professional Lawn Care Association of America's 1984 Show and Conference.

And what a week it will be! PLCAA '84 is shaping up to be the biggest, best gathering of powerhouse speakers and exhibitors in our five-year history. The seminar program has been expanded to offer over 16 hours of educational programming hosted by a new lineup of outstanding speakers, problem solvers all.

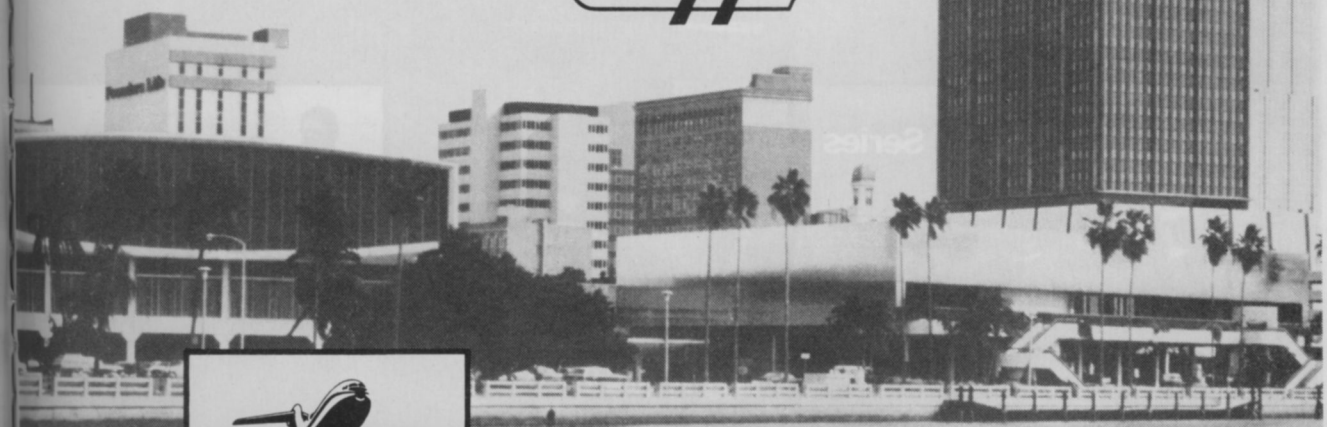
In addition, last year's popular "Workshop" series will offer even more hours of "how to" advice on business basics like purchasing, business expansion, and promotional techniques. Subjects aimed at boosting the bottom line of your operation.

IT'S SHOWTIME, FOLKS! Virtually every major vendor and supplier to the lawn care industry will be among the over 100 exhibitors at PLCAA '84. Longer show hours and more floor space in the beautiful Curtis Hickson Convention Center will give showgoers an unparalleled opportunity to see, touch, and compare all that's new in lawn care.

BRING THE FAMILY! Take advantage of Tampa, heart of Florida's funland. PLCAA '84 offers features, options, and vacation opportunities designed with fun in mind. Features like a special Spouse Program full of fun and surprises. Options like a week-long post-conference Carribean cruise on the luxurious New Amsterdam, newest ship in the Holland America Line. Opportunities like a chance to visit those Florida wonderlands you've been dreaming about — Disney World, Epcot Center, and Sea World. Indicate your interest on the coupon below and details will be sent to you.

'84 is the year. Tampa is the place. Go for it!

Symbol of Good Practice
PLCAA
PROFESSIONAL LAWN CARE ASSOCIATION OF AMERICA



Delta Airlines have been appointed official carrier for PLCAA '84. Delta has regular scheduled flights from most major US cities to Tampa and will be offering discounted fares to all PLCAA '84 participants — **up to 30% off regular prices.**

DELTA
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Circle No. 129 on Reader Inquiry Card

POWER START *from page 74*

life, quick starting, and easy installation and maintenance.
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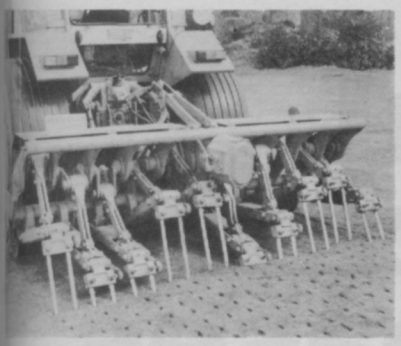
End soil compaction with Verti-Drain

Redexim B.V. of the Netherlands has introduced the Verti-Drain, which features 20 tines that press into the ground to a maximum depth of over 15 inches. This system is said to allow adequate absorption of air, water, and fertilizer into the soil, thus eliminating the problem of soil compaction. Verti-Drain can be mounted on the rear of a 65-hp tractor with broad tires and high elevating power.



The tines work in pairs to penetrate the soil at an adjustable angle. When they are withdrawn, a jerking motion breaks up compacted soil and rows of holes are made, which can be varied in widths. Three models range in width from 59 in. through 98-1/2 in.
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Diaphragm pumps make Smithco unit versatile

Smithco sprayers are equipped with Hypro diaphragm pumps that enable them to handle abrasive, granular materials, wettable powders, and corrosive chemicals without damage. Both sprayers in the line are built for low-cost operation and long wear.

The Lark Special delivers up to 9.5 gal/minute, with pressures up to 550 psi. The Hawk Special delivers up to 14.6 gal/minute, with pressures also to 550 psi. Any material sprayed in either pump has no contact with the critical moving parts, and any liquid-handling parts are epoxy coated for long wear. Pumps also run on lower horsepower while still meeting pressure spray requirements in normal use.
Circle No. 208 on Reader Inquiry Card

Chipper has power with less noise

Model 984 tree and brush chipper from Olathe Manufacturing Inc. has a 42-in.-diameter chipping drum that can turn at 750 rpm. This design al-

continued on page 82

They do. It's their job to know things first and then pass that information on to you fast. Things like new turf management techniques, effective methods of insect and weed control, what really works . . . and what won't.

LOOK FAMILIAR?
They should. You've seen them often at turf shows, seminars, conventions, wherever industry news is in the making. They're the editorial and sales management team of ***WEEDS TREES & TURF.*** Please meet (seated l. to r.) Ron Kempner, Bruce Shank, Dick Gore, and Maureen Hrehocik; (back row l. to r.) Bob Mierow, Kevin Cooney, Joe Kosempa, and Bob Earley.

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They apologize for not always being in when you call, but great stories are found in the field, not in the office. These pros know the only way to really cover the green industry is to get out and be a part of it. From turf test plots in Oregon to the corridors of our Nation's Capital, they're following leads, surveying markets and interviewing the landscape professionals who make our industry hum. Then, they use their years of experience to pull it all together, analyze it and present it to you in a crisp, easy-to-read and easy-to-use style. That way, you have the information you need to do your job better, faster and more effectively.

The next time you want to know something in the green industry, give them a call. If you can't reach them at the office, don't worry. They'll reach you in the pages of ***WEEDS TREES & TURF.***

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Warren's® A-34 BenSun® rates 23% better in quality; 33% better in density than its top 10 competition.

10 = very best 1 = very poor

VARIETY	QUALITY	DENSITY
Warren's A-34 BenSun®	9.0	8.5
Average of top 10 competitors	7.32	6.38

Source: Purdue University, November, 1983-Field Day

Warren's A-34 BenSun® Kentucky Bluegrass	**23% Better**	**33% Better**

If you're looking for a top quality Kentucky bluegrass that stands up under heavy traffic, makes maximum use of fertilizers, is aggressive in its growth so it chokes out weeds, takes up to 65% shade and can be mowed to as close as half an inch...then you need Warren's A-34 BenSun.®

It's the hardy Kentucky bluegrass that's providing better, safer playing fields coast-to-coast in some of the nation's leading stadiums —including San Francisco's Candlestick Park, Denver's Mile High Stadium, Milwaukee's County Stadium, Chicago's Comiskey Park and Baltimore's Memorial Stadium; as well as many famous college and university stadiums.

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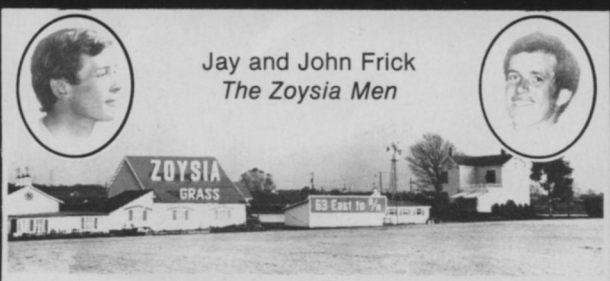

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CHIPPER *from page 77*

lows it to have an economical power use without maximum noise. It can handle logs to 12-in.-diameter or 12-in. slabs, and features a controlled hydraulic feed with uniform chip size.

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Cable plow built for stability, long use

The B-30 cable plow from Burkeen Manufacturing Co. replaces the DP30, while keeping features such as a Hatz

What makes Ryan® big aerators worth the investment:

Large area cultivation plus five choices of tines to get to the root of your problem fast.

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Every time you cut grass, it gets harder for water and fertilizer to seep down through the thatch build-up.

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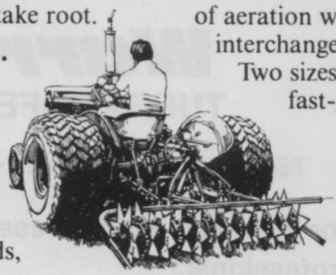

The Ryan Tracaire — built specifically for athlethic fields and other flat grounds.

Two sizes of **deep-slicing** tines to open up dry soil in the summer.

And **open-spoon** tines to prepare the turf for new seed and fertilizer in the fall.

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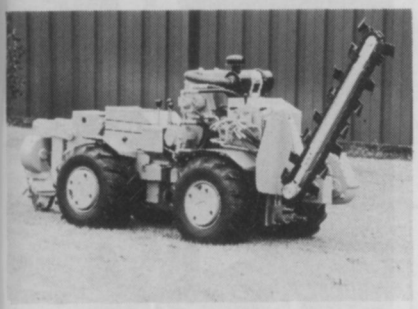
To do that, just return our coupon today. Or call us toll-free, **1-800-228-4444.**

Circle No. 147 on Reader Inquiry Card

diesel engine, articulation, spring isolated plow, and gearbox driven trencher. New features include low profile for stability, large hydraulic reservoir, streamlined hydraulic system, heavier weight for more traction, new controls, and various options.



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Hydroseeder features big tank loads

Finn Corporation has introduced the T110 hydroseeder with a 1,000-working-gallon tank, standard heavy-duty centrifugal pump, hydraulic motor-driven agitator, dual agitation, and remote hose operation. These components enable the T110 to seed, fertilize,

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WTT 54

and mulch up to 1/3 acre; or just seed and fertilize as much as 3 1/2 acres at distances to 90 feet. The T110 is available as a gooseneck model or skid mounted, and features several options that allow it to function for dust control, high-pressure tree spraying, equipment cleaning, and other uses.
Circle No. 211 on Reader Inquiry Card

Hose, cable reels are neat and quick

Hannay portable hose and cable reels Models 1100, 1200, and 1300 are designed to get the job done fast, without piling, tangling, kinking, or lugging. Pickup and storage are neat and quick; wear and tear are minimized. Hose models are direct crank rewind, continuous flow reels with swivel joint inlet, fluid hub, and outlet riser. Cable reel uses direct crank rewind, has three-conductor wiring, and features a six-foot lead with 110-volt plug prewired to the reel.
Circle No. 212 on Reader Inquiry Card

Mower catches grass, powered by Honda

New design features abound in the Walker Manufacturing Co. mower. It has a 6.7-bushel grass catcher and an oscillating delivery spout to pack the catcher full, even when mowing long/wet grass. Walker has added a 42-in. rear discharge deck to fit on the basic tractor. A Honda G400 industrial engine powers the mower, and is designed for long life and reliable performance.
Circle No. 213 on Reader Inquiry Card

New applicator line for lawn care pros

The GN600 lawn care applicator from Great Northern Equipment Co. is designed for the special needs of lawn care professionals. It handles 600 gallons in a stainless steel tank, for 200,000 sq.-ft. of coverage per load. It can be mounted on existing chassis, or ordered on a one-ton Ford diesel truck. The applicator, and others in the line with capacities to 1,600 gallons, feature pump-on and pump-off valve system, screens before pump and hose reel assembly, full metal cab

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Distributors: Circle No. 119 on Reader Inquiry Card

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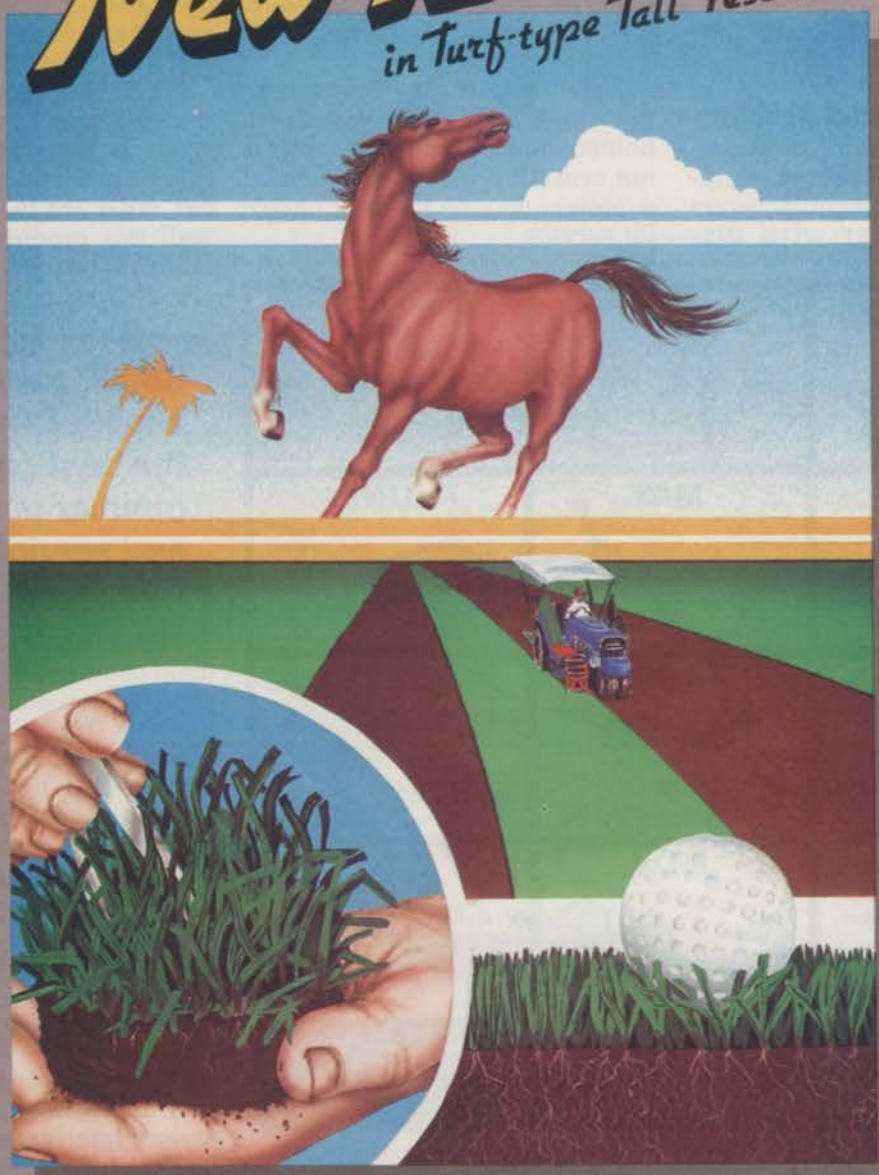
Circle No. 118 on Reader Inquiry Card

MEET THE New Breed

in Turf-type Tall Fescue



Meet **Mustang**-the new turf-type tall fescue whose extraordinary turf quality, heat/drought tolerance and dark green color make it a breed apart from the others.

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Circle No. 172 on Reader Inquiry Card

TRIMMER *from page 22*

are beginning to see a switch as repeat buyers trade up from electrics to bigger electric and gasoline models."

Service a potential problem

Since trimmers are a low-dollar, low priority item for some equipment distributors, manufacturers must work closer with distributors. "A trimmer with a $300 price tag can get lost in a distributor's catalog," says Nathan. "We have to be highly selective about distributors because so many of the big-name distributors concentrate on big-name, high-dollar products."

Retail outlets may operate under the assumption you are a homeowner and speed of repair is not crucial. Smaller, commercial suppliers may be the best choice for service.

Attachments increase

The original powered trimmers had fixed heads, either leather or nylon lines and brush cutting blades. Today, heads are interchangeable and include small cultivators, blowers, edger blades, and even snow shovels.

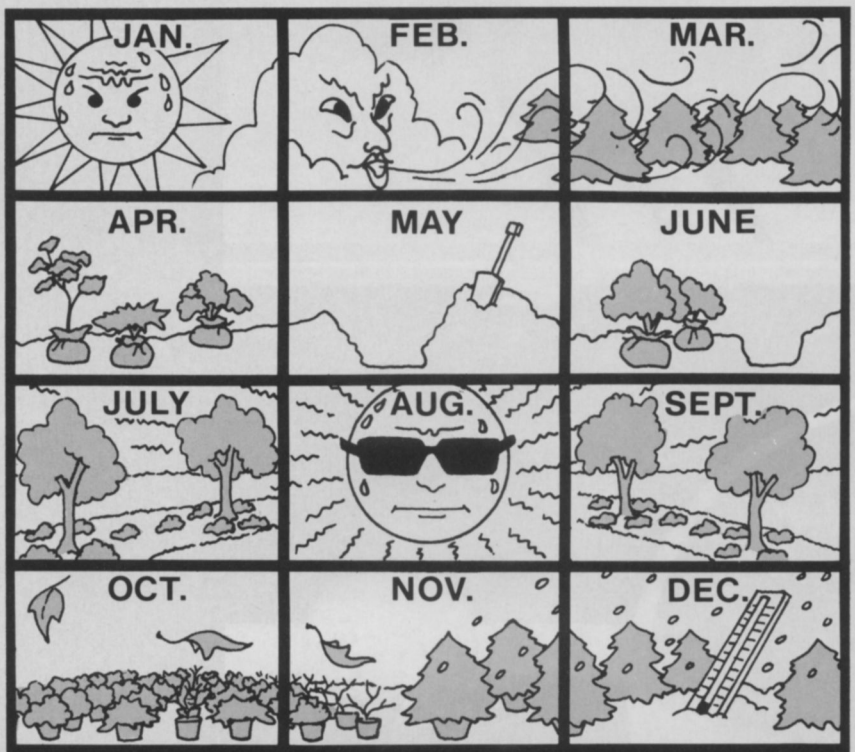
HMC Green Machine introduced an attachment series with a single power unit this spring. "I think once our competitors find out what we're doing and how well this product works, they'll jump on the band wagon as well," says Katherine Takis of HMC.

Small, commercial suppliers may be the best choice for trimmer purchase and service.

"Historically, power equipment companies have never had a great deal of success with multipurpose tools," claims Stihl's McGuire. "A few companies are coming out with attachments like little cultivators and snowblowers, but we think the jury is still out for acceptance on these attachments." Stihl was the first to introduce a free-swinging plastic blade head that permits cutting of tough weeds without severe damage to trees or other objects.

Engines now have solid state ignition, improved air filtration, fuel injection starting, improved carburetors, larger fuel tanks, and better balance for the operator. Gasoline trimmers weigh from 12 to 20 lbs. with engines ranging from 21cc to 85cc.

Versatility and longer engine life increase the efficiency of the trimmer as a professional landscape maintenance tool. Like trim mowers, you don't expect them to last forever when using them eight hours each day, six days each week. They have a role to play in the market so you build replacement cost into your charges. Chemicals can't eliminate the need for mechanical trimmers. The key is to combine all tools to achieve the greatest efficiency. **WT&T**



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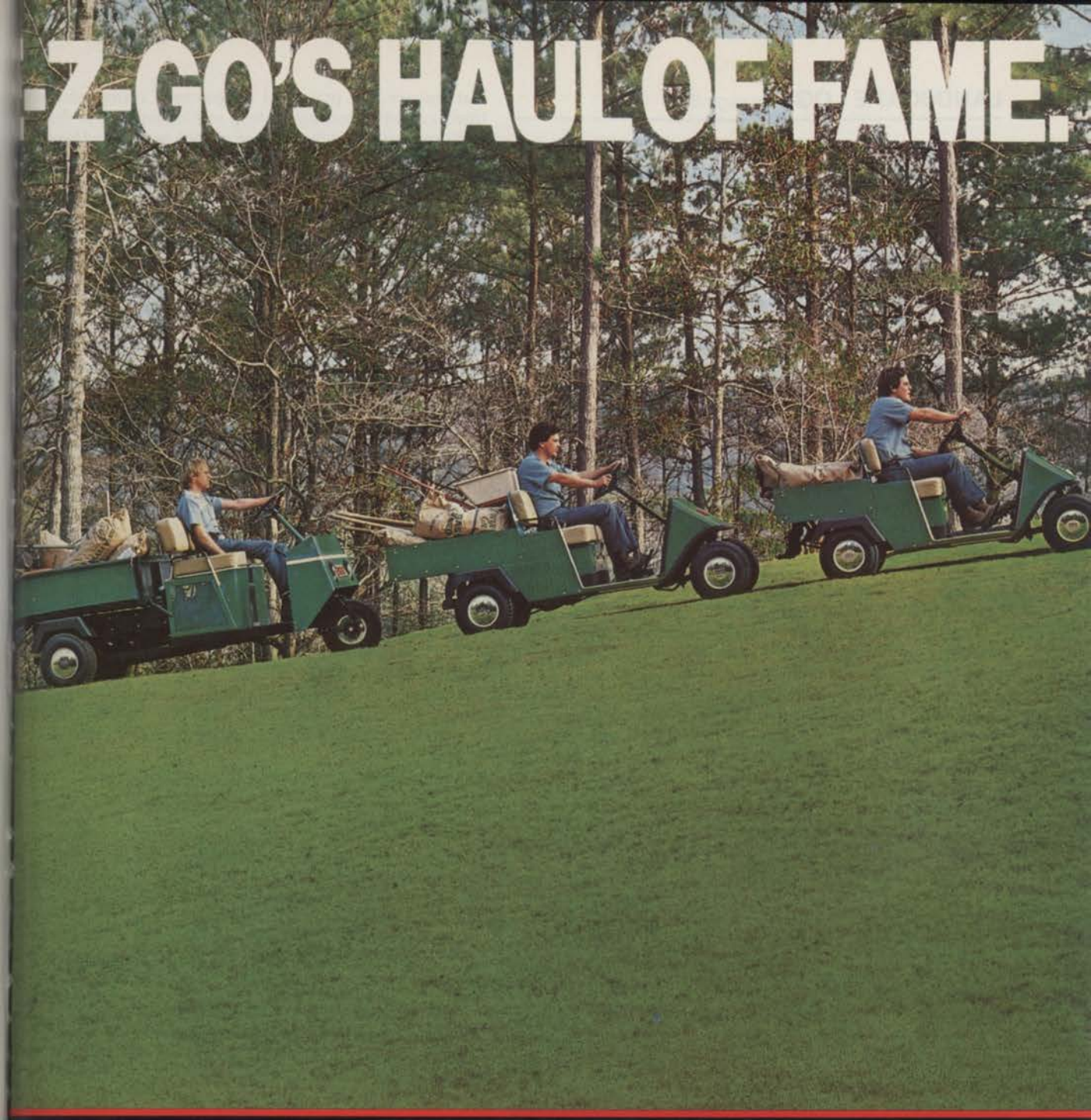

Our gas powered GX-800, and our new electric X-500 light turf vehicles are perfectly suited for tough jobs when you need a utility vehicle but a truck is too much.

The GX-800 sips gas like a miser, and won't mar your manicured turf. And its hill climbing ability and sure handling in bad weather make it a step up from any pick-up truck.

Likewise, the new electric X-500 will give you a full day's work on one night's charge. And it too is perfect when you need a vehicle as strong as an ox yet as gentle as a lamb.

For heavier work, the GT-7 has you covered. With a large payload capacity and steel-strong durability to match any heavy-duty turf truck.

Plus, it's infinitely adaptable to the job at hand. A hydraulic dump, aerator, spreader, sprayer, top dresser, and many other options can be easily added to make your particular task less of a chore.

The gas powered GX-800, GT-7, and the new electric X-500. They're tough, strong and best of all they're from E-Z-GO. Which means there's thirty years of experience engineered into each one. The World's Finest Utility Vehicles For Sports and Industry. **E-Z-GO TEXTRON**

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Circle No. 254 on Reader Inquiry Card

oxychlor, or Turcam. Borers should be watched, especially on birch, in June. If D-shaped holes are visible on the bark, apply Dursban or other recommended pesticides.

Disease control

To the manager of high-maintenance turf, June is a time to apply preventative materials to problem spots and to keep on top of other susceptible areas. The prime environmental causes of disease should be corrected, including poor drainage, dew, stagnant air, and timing of irrigation.

Since the primary crabgrass germination period is over and preemergence herbicides have completed their usefulness, early June is a good time to aerify disease-prone turf areas.

Michigan State University Pathologist Joe Vargas is now recommending brief daily irrigation (mid-day) to protect beneficial organisms in the thatch and soil, instead of waiting for wilt symptoms before irrigating. Excessive water is a prime cause of turf disease.

The prime summer troublemakers for northern turf managers are Dollar Spot, Brown Patch, Pythium, Fusarium and Anthracnose.

Dollar spot is caused by two fungi and can damage creeping bentgrass and annual bluegrass when temperatures are from 60 to 85 degrees F. Brown patch is a disease of highly-fed, cool-season turf during hot, humid days. Cultural controls include limiting nitrogen to one-half pound per thousand square feet per month. Anthracnose attacks mainly annual bluegrass, but also Seaside creeping bent, some fine-leaf fescues and perennial ryegrasses. Coring reduces anthracnose by encouraging deep rooting and better drainage.

Fusarium blight is a disease of cool-season turf beginning in late June. The frog-eye symptom is now thought to be caused by a combination of three different fungi (Smiley, Cornell). Preventative Fusarium control, such as with Bayleton, should be applied *before* symptoms appear, no later than mid-June. Pythium may be the worst cool-season turf disease since it kills the entire plant, not just foliage. Moderating fertilization and improving drainage are chief cultural controls.

The prime warm-season turf diseases are Brown Patch, Helminthosporium leaf spot and gray leaf spot. Brown patch is most common on thatchy St. Augustine and zoysia when days are warm and nights are cool. It can also attack bermudagrass and ryegrass. Helminthosporium leaf spot (melting out) is discovered on bermudagrass, ryegrass, and to a lesser extent centipede and St. Augustine, when temperatures range from 70 to 95 degrees F. Gray leaf spot is a problem of St. Augustine in warm, humid weather.

Specific chemical controls will be given in the June Disease Control Guide.

Ornamental diseases, especially on roses, dogwood, azalea, rhododendron, hawthorne, and fruit trees, should be monitored. Problem plants will require treatment every two weeks through the summer. See June Disease Control Guide for details.

Trimming evergreens

Trimming narrow-leaf evergreens can be done in June and July. Up to half of new candle growth can be removed. Shearing for shape and pruning for density should be done in June. **WT&T**

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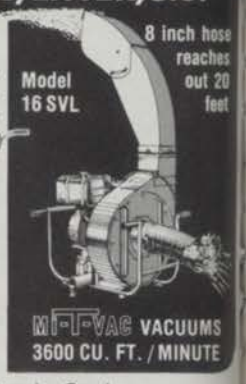

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DYRENE is a Reg. TM of Mobay Chemical Corporation

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EVENTS

JUNE

Menninger Flower Tree Conference, June 7-8, Cypress Gardens, FL. Open to individuals interested in tropical and subtropical trees. Topics include plant importation, tree propagation, producing specimen trees, and introducing new species to the trade. Contact Florida Nurserymen and Growers Association, PO Box 16796, Temple Terrace, FL 33687. (813) 985-8511.

Kentucky Cemetery Association Annual Convention, June 9-11. Executive Inn, Louisville, KY. Contact Lewis Tingley, Resthaven Memorial Park, PO Box 18068, Louisville, KY 40218. (502) 491-5950.

Fertilizer Institute Marketing Conference, June 10-13. White Sulfur Springs, WV. Contact Pamela Lucas, The Fertilizer Institute, 1015 18th St. NW, Washington, DC 20036. (202) 861-4900.

Annual Interior Landscape Conference, June 13-16. Registry Hotel, Dallas, TX. Technician's Short Course on June 13. Topics include Working with Developers, Calculating Costs, Personnel Recruiting and Management, Forecasting and Budgeting, Self-Image and Public Relations. Contact Interior Landscape Div., Associated Landscape Contractors of America, 1750 Old Meadow Rd., McLean, VA 22102. (703) 821-8611.

Minnesota Park Supervisors Annual Equipment Show, June 15. Dred Scott Playfield, Bloomington, MN. Contact Lyle Rude, City of Bloomington, 2215 West Old Shakopee Rd., Bloomington, MN 55431. (612) 881-5811.

Turf Seed Annual Field Day, June 21. Hubbard, OR. A review of turf and seed production trials, as well as turf and forage grass breeding projects. Barbecue follows tour. Contact Turf Seed Inc., 77 West G St., Hubbard, OR (503) 981-9571.

University of Massachusetts Turf Field Day, June 27. South Deerfield, MA. Contact University of Massachusetts, Dept. of Plant and Soil Science, Stockbridge Hall, Amherst, MA 01003. (413) 545-2353.

JULY

American Association of Nurserymen Annual Conference, July 14-18. San Antonio, TX. 109th convention will be addressed by Lady Bird Johnson. Includes meetings by National Landscape Association, Garden Centers of America, and Wholesale Nursery Growers. Contact AAN, 1250 I Street, NW, Suite 500, Washington, D.C. 20005. (202) 789-2900.

American Sod Producers Association Summer Convention and Field Days, July 24-26. Olympia Spa and Resort, Oconomowoc, WI. Contact Doug Fender, ASPA, 4415 W. Harrison St., Hillside, IL 60162. (312) 449-2844.

To insure that your event is included, please forward it, 90 days in advance, to: WEEDS TREES & TURF Events, 7500 Old Oak Boulevard, Cleveland, OH 44130.

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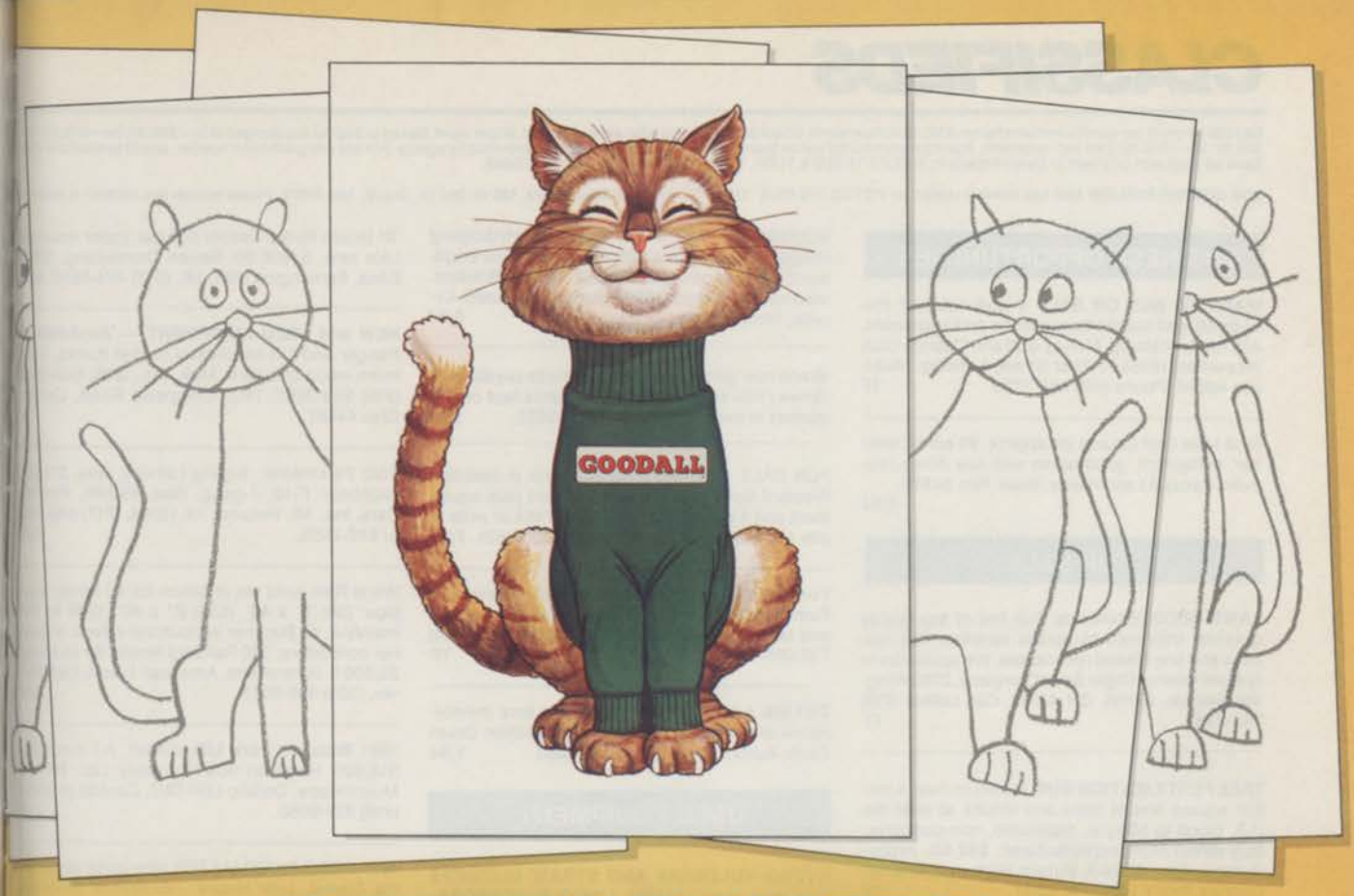

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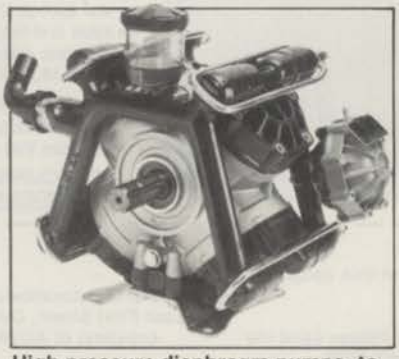

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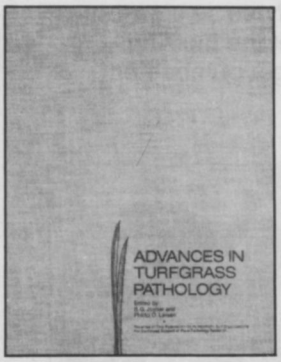

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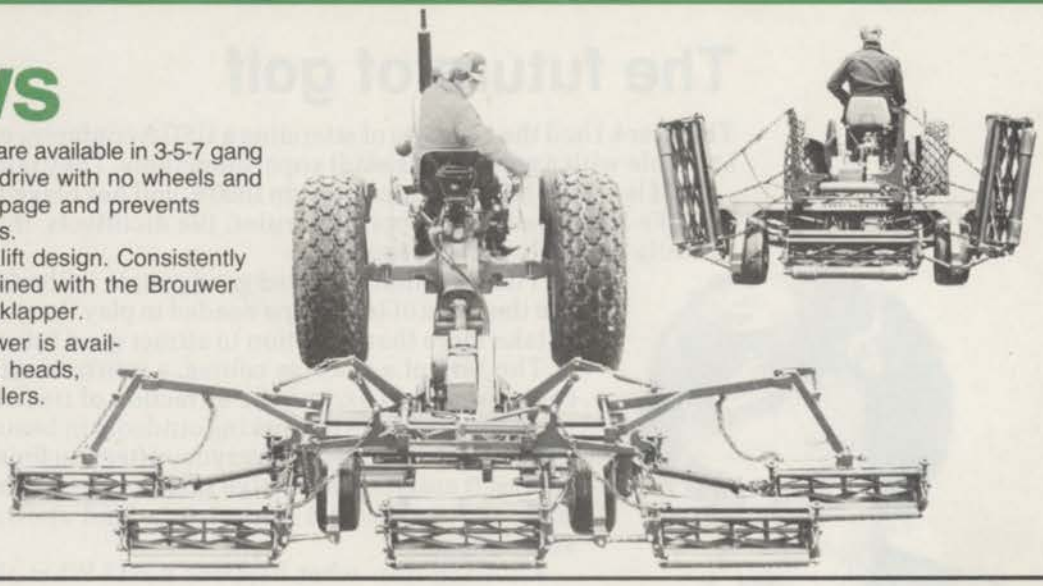

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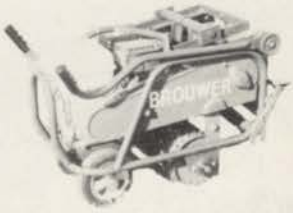

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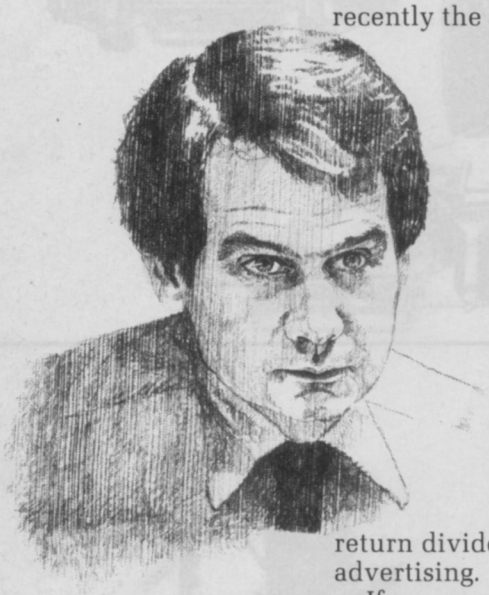
Circle No. 177 on Reader Inquiry Card

The future of golf

This week I had the pleasure of attending a USGA conference. During lunch, I sat at a table with a group of assistant superintendents. They taught me a great deal.

Golf is rich in history. Since the late 1800's, golf has played a part of American life. We immortalize the sport, the rules, the architects, the golfers, and more recently the early greenskeepers.



This tradition attracted good people in the 50's and 60's to manage the acres of landscape needed to play the game. Today, it seems to take more than tradition to attract good future superintendents.

The lure of a prestige course, a tournament course, or a resort course seems to exceed the attraction of tradition. The job entails more than the love of working outdoors in beautiful surroundings, or being able to play golf everyday after you finish taking care of the course. It entails competitive salaries, course prestige, and fringes, such as freedom and budget to attend shows and be active in associations.

Knowing this, what happens next? What about those persons who liked golf so much they put up their own money to buy the land, build the course and run it? I know men who work seven days a week, 12 hours a day, and take home less than beginning superintendents at private clubs. Can this last?

Today, golf is a contest, both as a player and as a superintendent. Golf is becoming a commodity needed to help sell real estate, return dividends to stockholders of multi-course companies, or sell television advertising.

If you were a young turf graduate, wouldn't you tend to overlook the tradition for the bucks of being part of 'the big time'? After five years as an assistant superintendent, wouldn't you be busting at the seams to experience the challenge of a tournament, adding another nine, or rebuilding an old course? When you saw the equipment or chemical budget for the first time, didn't you ask yourself why it was so much more than your salary?

These are natural reactions today for anyone, not just college 'know-it-alls'. The only way to deal with them is to realize how they feel, teach them their time will come, keep them challenged and interested, and remind them of the tradition of the sport, not just the facts of the business of golf.

Kids aren't as idealistic as they were in the 50's and 60's. When they select a career and go to college, they are thinking of more than a pleasant career. They are thinking of income, advancement, and making their mark on this world. That ambition and drive is valuable. They will fight to achieve their goals or leave the industry for more challenging and responsive careers.

Bruce F. Shank

by Bruce F. Shank, executive editor

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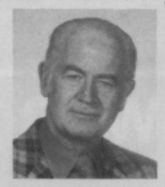

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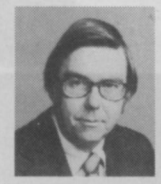

Kent Kurtz
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due. The most effective gicide against Pythium ght and damping-off.

ythium weather. High temperres, high humidity and high iety. Once Pythium takes root, an destroy turf within hours. Unless you take a grass-roots apach to Pythium. With Subdue.®

bdue works both on contact d systemically.

Subdue fights Pythium blight d damping-off—as well as downy dew (yellow tuft)—in two ways. contact, Subdue destroys the fungi in the soil. Systemically, Subdue prevents disease from within grass plants. That's because Subdue is water soluble—easily absorbed by roots. So Pythium—and now, downy mildew—don't have a chance.

Subdue also controls costs.

Subdue's systemic action means longer, more effective residual protection. Fewer applications. Lower chemical costs. And savings in maintenance and labor. And Subdue's low application rate—1 to 2 fluid oz. per 1,000 sq. ft. for 10 to 21 days on established turf—makes Subdue the most cost-efficient protection you can buy.

Before Pythium weather strikes, subdue it. Use Subdue in a preventive maintenance control program. And get a good night's sleep.

Ciba-Geigy, Ag Division, Box 18300, Greensboro, NC 27419.

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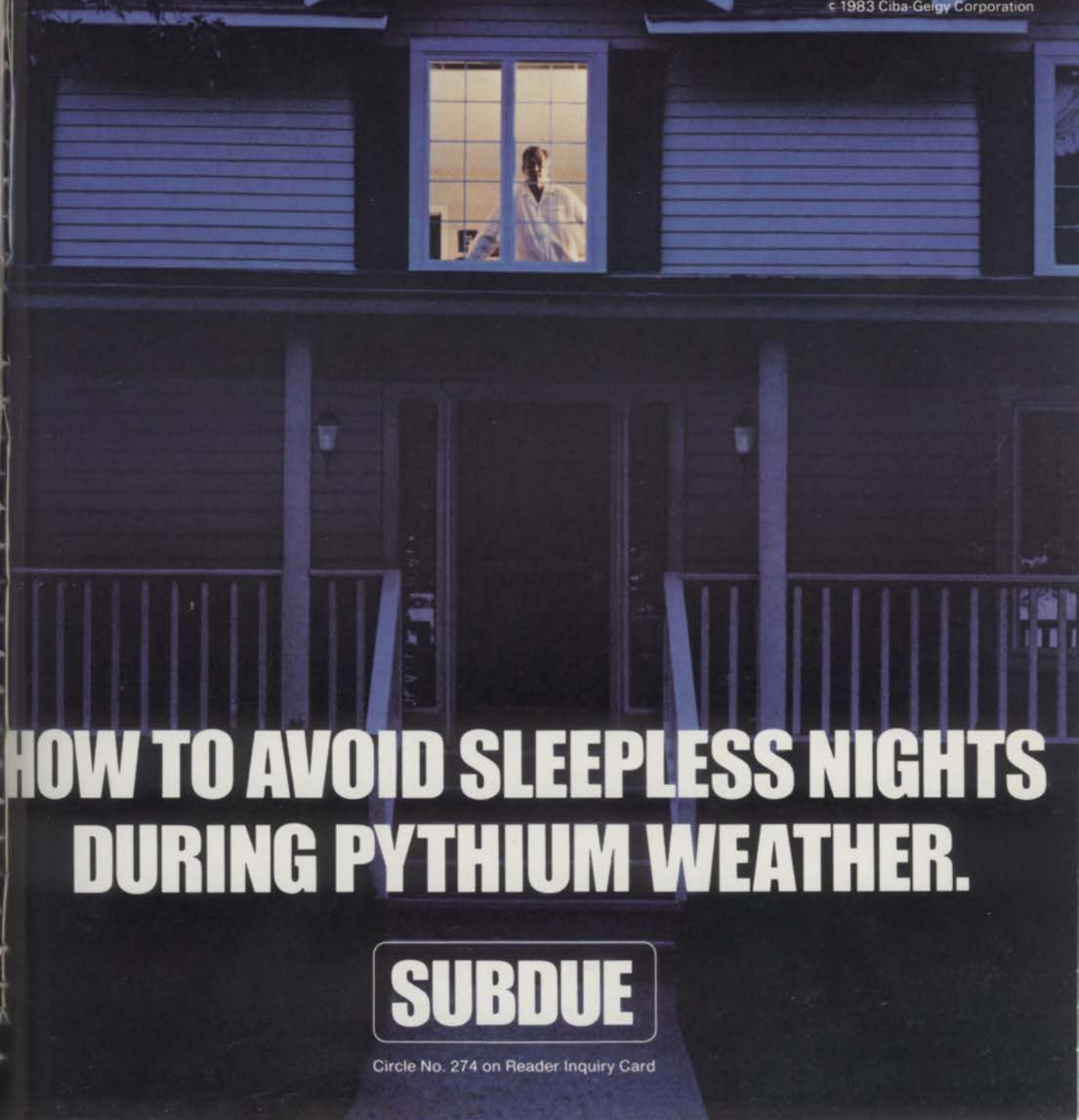

HOW TO AVOID SLEEPLESS NIGHTS DURING PYTHIUM WEATHER.

SUBDUE

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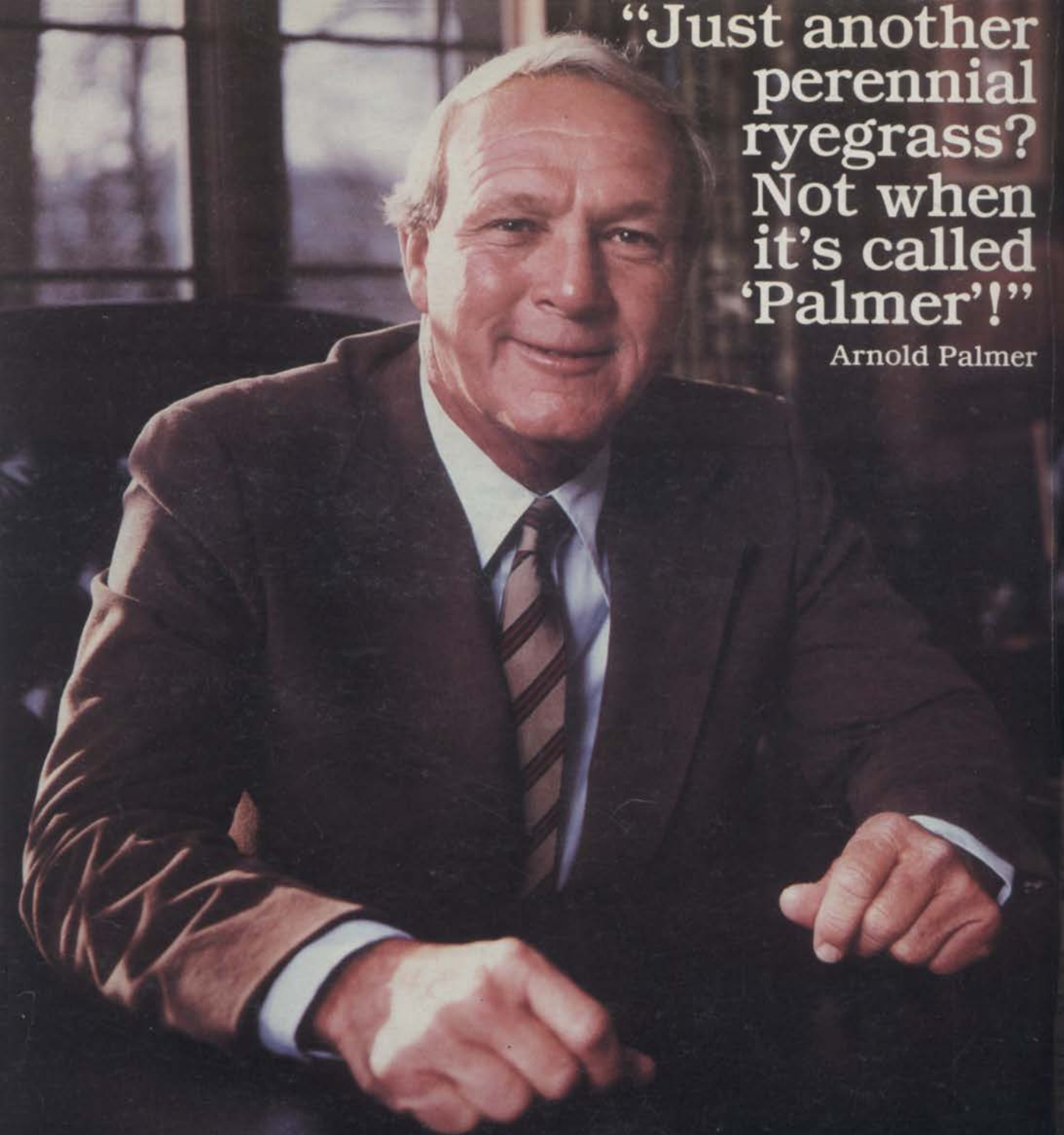

"If a ryegrass is going to be named Palmer, it would have to be very special. And believe me this one is.

"As you know, I'm a golf course owner and I'm involved in golf course design and construction with the Palmer Course Design Company. That makes me very critical of turfgrass. Let me tell you some of the qualities we're finding in this variety. First of all, whether used in the North or South, Palmer shows excellent heat and drought tolerance and exceptional resistance to brown patch and leaf spot. Secondly, it establishes very quickly. In no time flat you can have a cover of fine-leafed, attractive, dark green turf. When it comes to mowing, it cuts neat and clean. That makes it look good and play well. In fact, some of the best turf I've played on lately has been seeded with Palmer ryegrass.

"Just check the latest university test results and compare other perennial ryegrasses to Palmer . . . it's a winner."

Whether you're seeding a golf course, athletic field, cemetery or home lawn, you can expect the same performance Palmer ryegrass is giving on golf courses like Harbour Town at Hilton Head, The Tournament Players Club and Bay Hill in Florida or Ironwood in California where it's a big part of the overseeding programs.

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